SYSTEM TROUBLESHOOTING
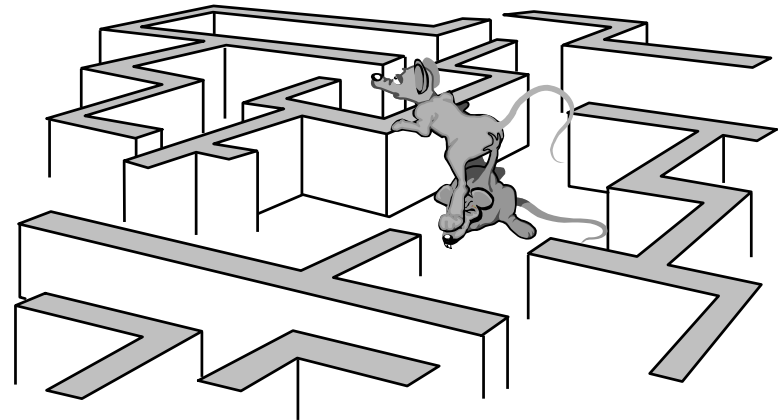
ECS Training

Overview of Lesson

- **Introduction**

- **System Troubleshooting Topics**
    - **Configuration Parameters**
    - **System Performance Monitoring**
    - **Problem Analysis/Troubleshooting**
    - **Trouble Ticket (TT) Administration**

- **Practical Exercise**

Objectives

- **Overall: Proficiency in methodology and procedures for system troubleshooting for ECS**

  - **Describe role of configuration parameters in system operation and troubleshooting**

  - **Conduct system performance monitoring**

  - **Perform COTS problem analysis and troubleshooting**

  - **Prepare Hardware Maintenance Work Order**

  - **Perform Failover/Switchover**

  - **Perform general checkout and diagnosis of failures related to operations with ECS custom software**

  - **Set up trouble ticket users and configuration**
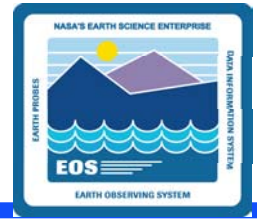
Importance

Lesson helps prepare several ECS roles for effective system troubleshooting, maintenance, and problem resolution:

- **DAAC Computer Operator, System Admin-istrator, and Maintenance Coordinator**

- **SOS/SEO System Administrator, System Engineer, System Test Engineer, and Software Maintenance Engineer**

- **DAAC System Engineers, System Test Engineers, Maintenance Engineers**

Configuration Parameters

- **Default settings may or may not be optimal for local operations**

- **Changing parameter settings**
  - **May require coordination with Configuration Management Administrator**
  - **Some parameters accessible on GUIs**
  - **Some parameters changed by editing configuration files**
  - **Some parameters stored in databases**

- **Configuration Registry**
  - **Script loads values from configuration files**
  - **GUI for display and modification of parameters**
  - **Script moves (re-names) configuration files so ECS servers obtain needed parameters from Registry Server when starting**
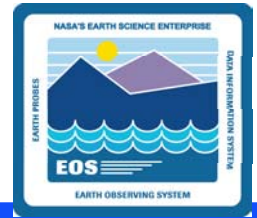
System Performance Monitoring

- **Maintaining Operational Readiness**
  - **System operators -- close monitoring of progress and status**
    - **Notice any serious degradation of system performance**
  - **System administrators and system maintenance personnel -- monitor overall system functions and performance**
    - **Administrative and maintenance oversight of system**
    - **Watch for system problem alerts**
    - **Use monitoring tools to create special monitoring capabilities**
    - **Check for notification of system events**

Accessing the EMSn Web Page

- **EMSn (formerly EBnet) is a WAN for ECS connectivity**
  - **DAACs, EDOS, and other EOSDIS sites**
  - **Interface to NASA Internet (NI)**
  - **Transports spacecraft command, control, and science data**
  - **Transports mission critical data**
  - **Transports science instrument data and processed data**
  - **Supports internal EOSDIS communications**
  - **Interface to Exchange LANs**

- **EMSn home page URL**
  - **http://bernoulli.gsfc.nasa.gov/EMSn/**

EMSn Home Page

Checking Network Health & Status

- **WhatsUp Gold graphic network monitoring tool**
- **Installation establishes network map and initial notifications, device properties, and polling**
- **Color alerts indicate status of mapped nodes**
  - **highlighted name: an event has been logged**
  - **green square background: device is up**
  - **light green diamond background: one poll missed**
  - **yellow diamond background: two polls missed**
  - **red elongated diamond background: device is down (after eight polls are missed, background is red starburst)**
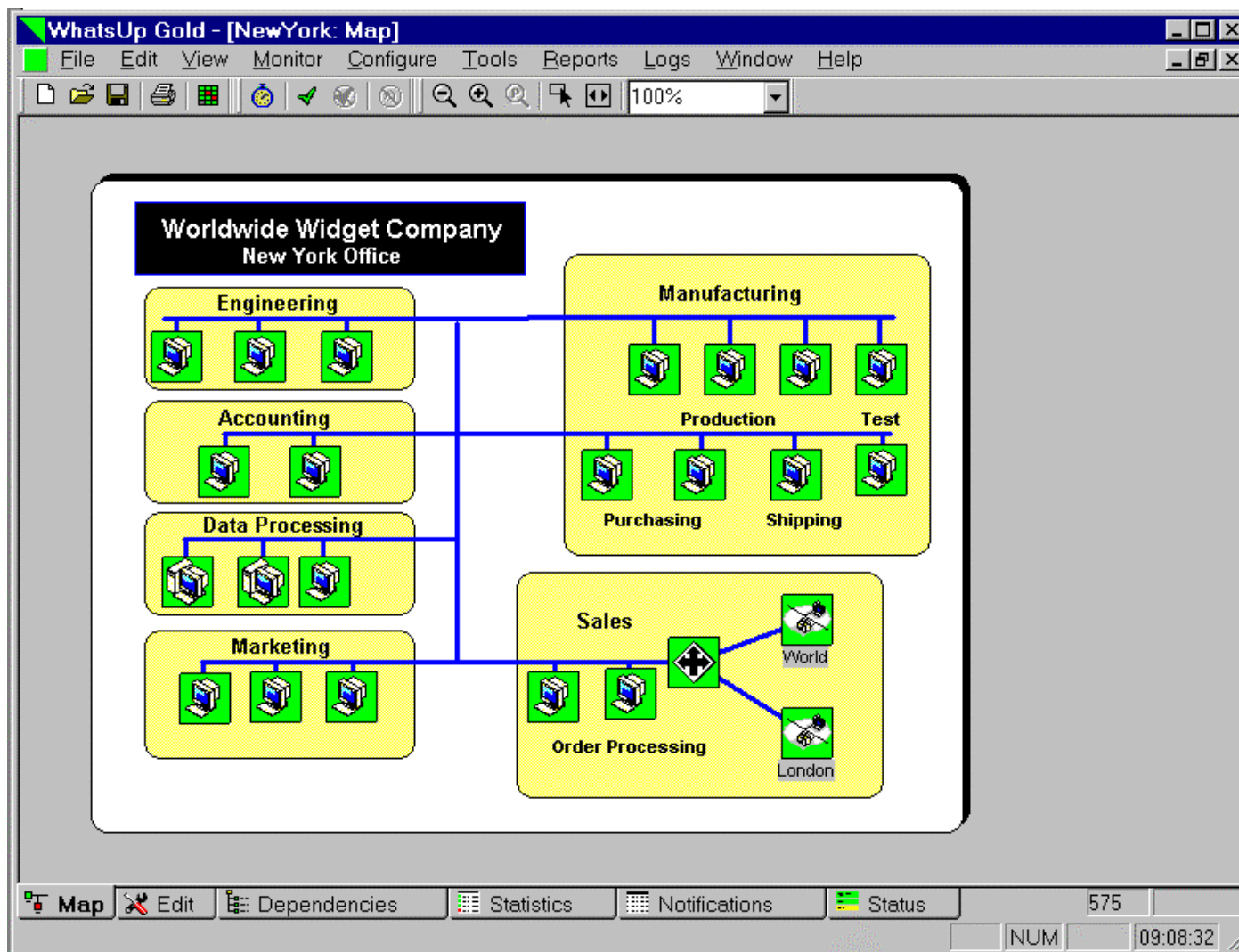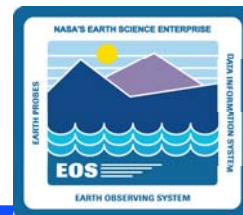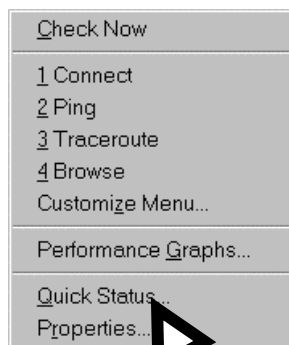 - **light purple octagon background: a service is down**
  - **gray square background: monitoring turned off**

Checking Network Health & Status: WhatsUp Gold Network Map

Checking Network Health & Status: WhatsUp Gold Status Display

Checking Network Health & Status: WhatsUp Gold Item Properties Box

625-CD-617-003
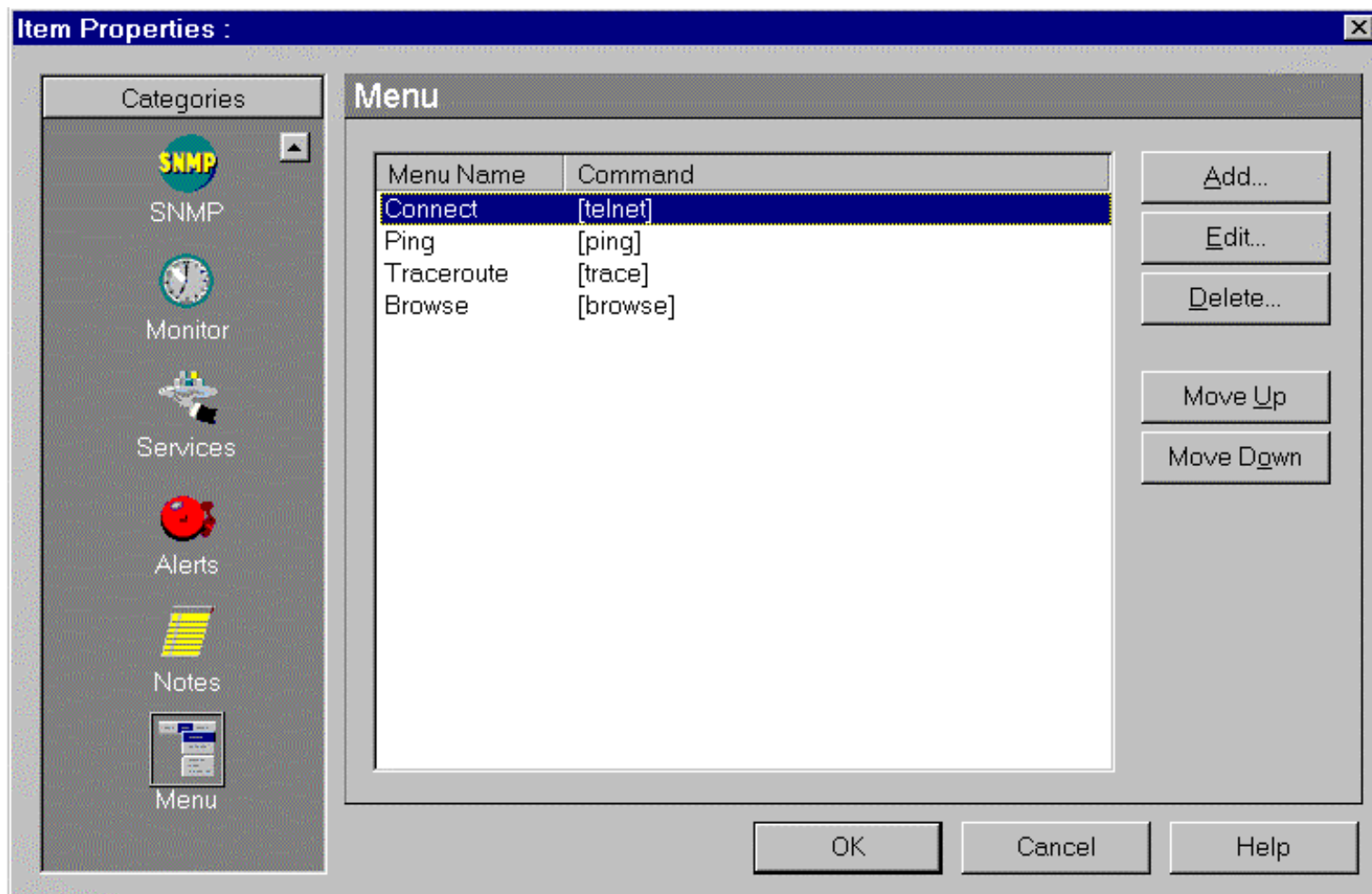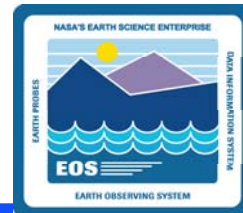
Checking Network Health & Status: WhatsUp Gold Net Tools

- **Info**
  - display a summary of device information
- **Time**
  - synchronize your computer's clock with a remote time server
- **HTML**
  - query a web address
- **Ping**
  - verify connectivity to a host
- **TraceRoute**
  - trace and view the route to an Internet host
- **Lookup**
  - query Internet domain name servers for information about hosts and name servers
- **Finger**
  - display information about users on a host
- **Whois**
  - display information about Internet domain ownership and groups

- **LDAP (Lightweight Directory Access Protocol)**
  - search directories for names and information on another computer
- **Quote**
  - view quotations from a quote server
- **Scan**
  - scan a range of IP addresses to create a network map
- **SNMP**
  - view and graph Simple Network Management Protocol (SNMP) values for a device
- **WinNet**
  - View Windows Network domains, hosts, and workstations
- **Throughput**
  - test data throughput on the connection between your computer and a remote computer
- **System Info**
  - information about your local system

Checking Network Health & Status: WhatsUp Gold Net Tools - Info

Checking Network Health & Status: WhatsUp Gold Net Tools - Ping

625-CD-617-003

Checking Network Health & Status: WhatsUp Gold Net Tools - Traceroute

Checking Network Health & Status: WhatsUp Gold Logs

- ## Syslog
  - logs standard UDP messages sent from devices (e.g., routers, switches, UNIX hosts)

- ## Event Log
  - logs events (changes to network status, such as a device going down or a device coming back up)
  - provides a history of what has occurred on the network
  - associated Debug Log window permits viewing events as they occur

- ## Statistics Log
  - records polling statistics (accumulated round trip times, or RTT, of polls sent to a device) to measure the availability and performance of a device

- ## SNMP Trap Log
  - displays all SNMP traps that have been received. To enable SNMP traps, the SNMP trap handler must be specifically enabled (refer to User's Guide)

Checking Network Health & Status
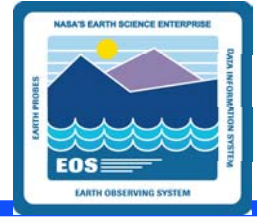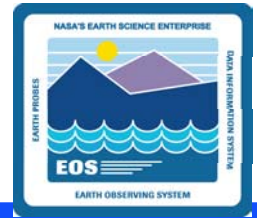
- **Whazzup??? system management tool**
  - **Host and mode views of network resources and servers**
  - **Status information on resources**
    - **Purple: Inability to ping specified host**
    - **Blue: Incomplete data collection**
    - **Red: Server is down**
    - **Yellow: Warning threshold has been exceeded**
  - **Performance monitoring capability**
- **ECS Assistant and ECS Monitor**
  - **Operator interface for starting servers**
  - **Indication of network and server status and changes**
  - **Associated script to ping servers**

Whazzup Welcome Screen

625-CD-617-003
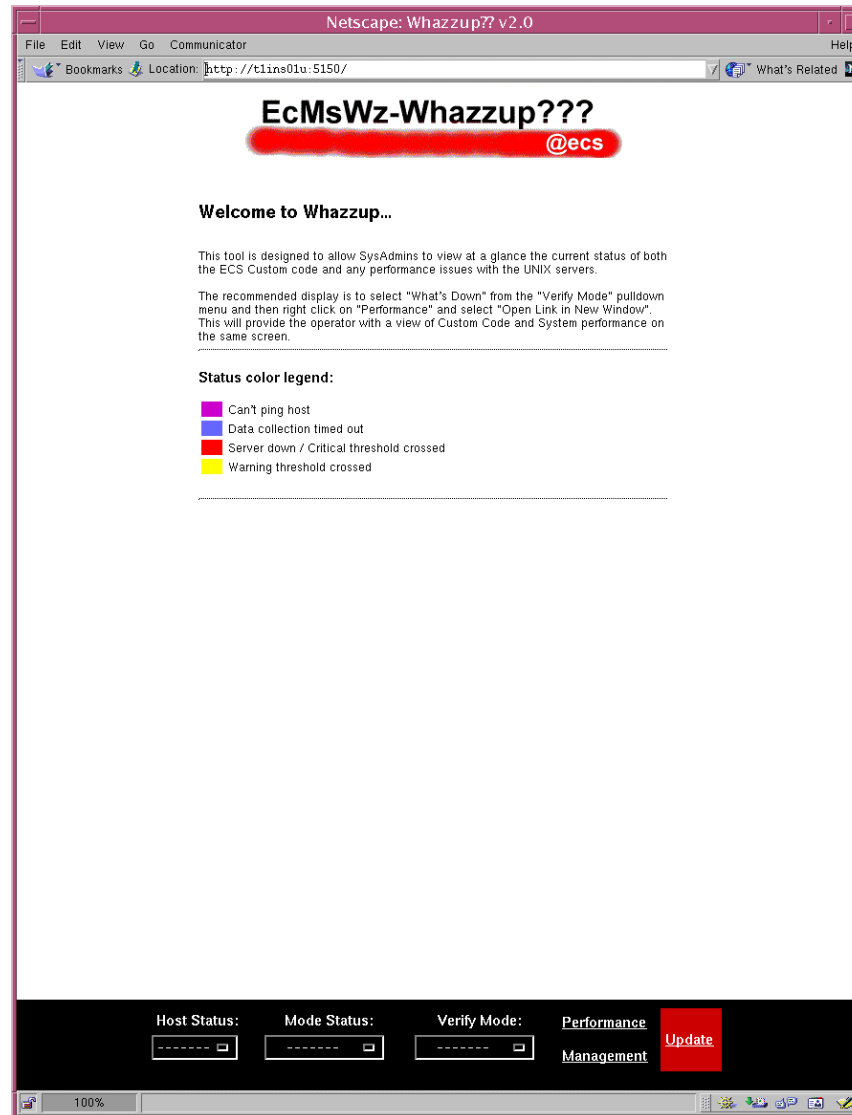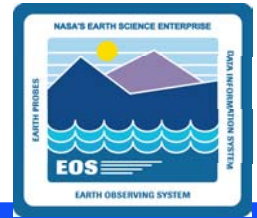
Whazzup: Performance Stats

Whazzup: Verify Mode, What's Down

Quick Check on Server Availability

- **The Whazzup??? tool is a web-based application**
- **Use a web browser for a quick check on servers**
  - **Start the tool**
  - **Select "What's Down" from the Verify Mode pop-up menu**
  - **Servers that are down are displayed by mode**
  - **If a host is down, its entries are highlighted in purple**

ECS Assistant and ECS Monitor
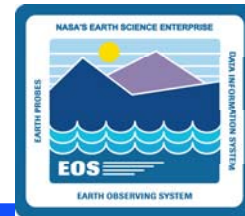
- **ECS Assistant**
  - **Independently available at each host**
  - **Subsystem Manager GUI permits subsystem installs and staging ESDTs and DLLs into their directories**
    - **ESDTs: CUSTOM/data/ESS**
    - **DLLs: CUSTOM/lib/ESS**

- **ECS Monitor**
  - **Independently available at each host**
  - **Display the status of servers by installed components**

- **Associated script to ping servers in a mode**
  - **EcCsIdPingServers <*mode*>**

ECS Assistant Manager Windows
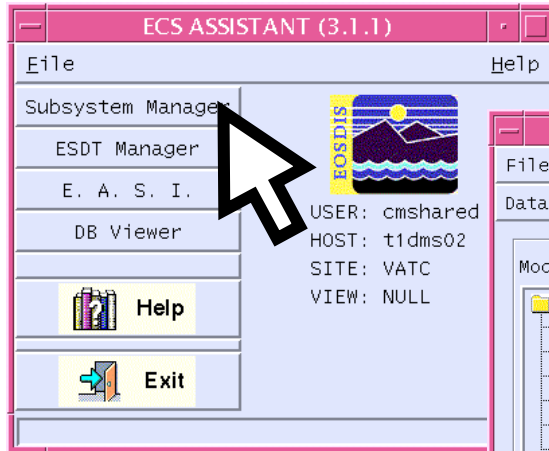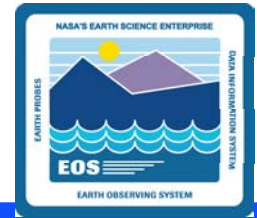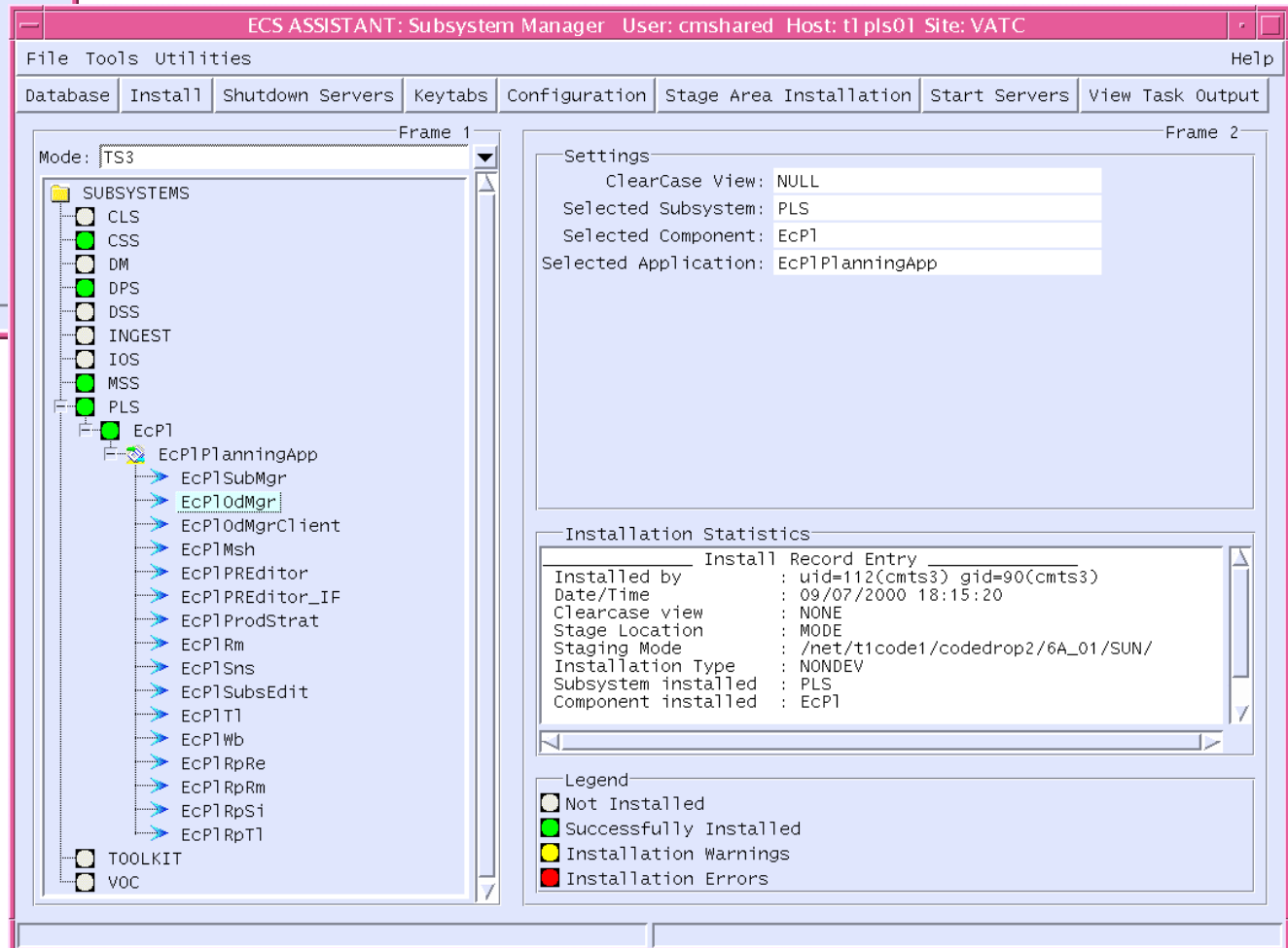
ECS Assistant Monitor Window
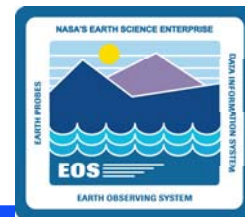
Analysis/Troubleshooting: System

- **COTS product alerts and warnings**
  (e.g., WhatsUp Gold, AutoSys/Xpert)

- **COTS product error messages and event logs**
  (e.g., AutoSys)

- **ECS Custom Software Error Messages**

  – **Listed in 609-CD-610-003**

Systematic Troubleshooting

- **Thorough documentation of the problem**
  - **Date/time of problem occurrence**
  - **Hardware/software**
  - **Initiating conditions**
  - **Symptoms, including log entries and messages on GUIs**
- **Verification**
  - **Identify/review relevant publications (e.g., COTS product manuals, ECS tools and procedures manuals)**
  - **Replicate problem**
- **Identification**
  - **Review product/subsystem logs**
  - **Review ECS error messages**
- **Analysis**
  - **Detailed event review (e.g., WhatsUp Gold event log, server logs)**
  - **Troubleshooting procedures**
  - **Determination of cause/action**

Analysis/Troubleshooting: Hardware

- **ECS hardware is COTS**
- **System troubleshooting principles apply**
- **Whazzup??? for quick assessment of status**
- **Server logs for event sequence**
- **Initial troubleshooting**
  - **Review error message against hardware operator manual**
  - **Verify connections (power, network, interface cables)**
  - **Run internal systems and/or network diagnostics**
  - **Review system logs for evidence of previous problems**
  - **Attempt system reboot**
  - **If problem is hardware, report it to the DAAC Mainten-ance Coordinator, who prepares a maintenance Work Order using ILM software**

Remedy OPEN Dialog for ILM Access
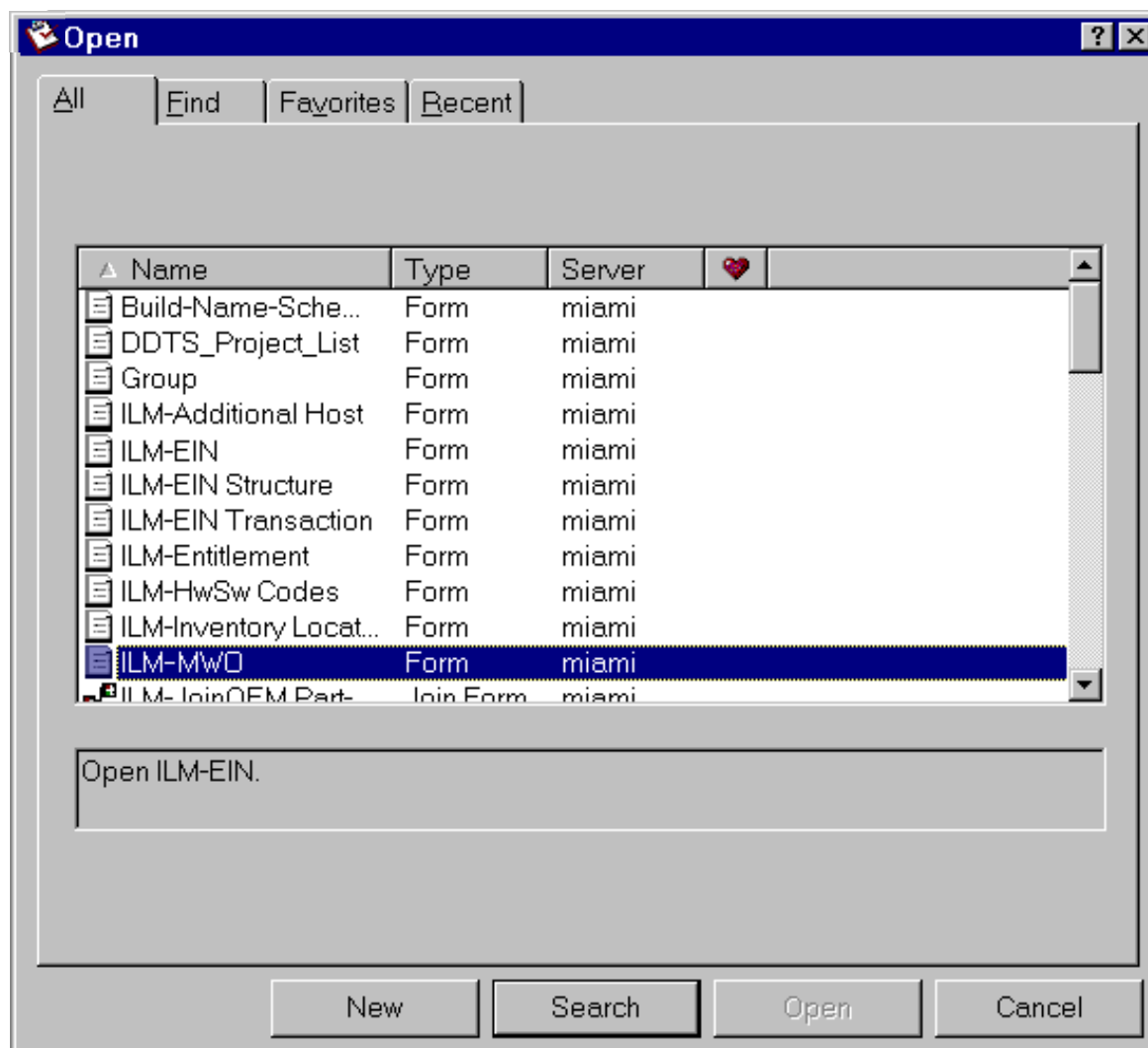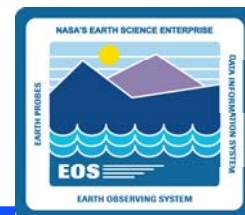
ILM Work Order Entry Screen

ILM-MWO Line Item Form

Hardware Problems: (Continued)

- **Difficult problems may require team attack by Maintenance Coordinator, System Administrator, and Network Administrator:**

    - **specific troubleshooting procedures described in COTS hardware manuals**

    - **non-replacement intervention (e.g., adjustment)**

    - **replace hardware with maintenance spare**
        - **locally purchased (non-stocked) item**
        - **installed spares (e.g., RAID storage, power supplies, network cards, tape drives)**

Hardware Problems: (Continued)

- **If no resolution with local staff, maintenance support contractor may be called**
  - Update ILM maintenance record by creating a Maintenance Work Order with problem data, support provider data
  - Call technical support center
  - Facilitate site access by the technician
  - Update ILM record with data on the service call
  - If a part is replaced, additional data for ILM record
    - Part number of new item
    - Serial numbers (new and old)
    - Equipment Identification Number (EIN) of new item
    - Model number (Note: may require CCR)
    - Name of item replaced

ILM Work Order Modification

- **Completion of Maintenance Work Order Entry copies active children of parent EIN into the work order**

- **Modify the Maintenance Work Order to enter down times, and vendor times and notes**

- **From Maintenance Work Order screen, ILM-MWO Line Items form is used to record details**
  - **Which item (or items) failed**
  - **New replacement items**
  - **Notes concerning the failure**

Non-Standard Hardware Support

- **For especially difficult cases, or if technical support is unsatisfactory**

  - **Escalation of the problem**
    - **Obtain attention of support contractor management**
    - **Call technical support center**

  - **Time and Material (T&M) Support**
    - **Last resort for mission-critical repairs**

Preventive Maintenance

- **Elements that may require PM are the STK robot, tape drives, stackers, printers**

  - **Scheduled by local Maintenance Coordinator**

  - **Coordinated with maintenance organization and using organization**
    - **Scheduled to be performed by maintenance organization and to coincide with any corrective maintenance if possible**
    - **Scheduled to minimize operational impact**

  - **Documented using ILM Preventive Maintenance record**

Troubleshooting COTS Software

Issues

- **Software use licenses**
- **Obtaining telephone assistance**
- **Obtaining software patches**
- **Obtaining software upgrades**

Vendor support contracts

- **First year warranty**
- **Subsequent years contracts**
- **Database at ILS office**
- **Contact ILS Support**
  - **E-mail: ilsmaint@eos.hitc.com**
  - **Telephone: 1-800-ECS-DATA (327-3282)
    Option #3, Ext. 0726**

COTS Software Licenses

Maintained in a property database by ECS Property Administrator

- Licenses vary by type of software and vendor policy
- Property Administrator maintains
  - Master copies of licenses
  - License database
  - Copies of software for installation at sites

COTS Software Installation
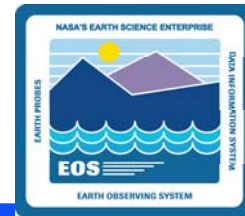
- **COTS software is installed with any appropriate ECS customization**

- **Final Version Description Document (VDD) available**

- **Any residual media and commercial documentation should be protected (e.g., stored in locked cabinet, with access controlled by on-duty Operations Coordinator)**

COTS Software Support

- **Systematic initial troubleshooting**
  - **Examine server logs to review event sequence**
  - **Review error messages, prepare Trouble Ticket (TT)**
  - **Review system logs for previous occurrences**
  - **Attempt software reload**
  - **Report to Maintenance Coordinator (forward TT)**

- **Additional troubleshooting**
  - **Procedures in COTS manuals**
  - **Vendor site on World Wide Web**
  - **Software diagnostics**
  - **Local procedures**
  - **Adjustment of tunable parameters**

COTS Software Support (Cont.)

- **Organize available data, update TT**
  - Locate contact information for software vendor technical support center/help desk (telephone number, name, authorization code)

- **Contact technical support center/help desk**
  - Provide background data
  - Obtain case reference number
  - Update TT
  - Notify originator of the problem that help is initiated

- **Coordinate with vendor and CM, update TT**
  - Work with technical support center/help desk (e.g., troubleshooting, patch, work-around)
  - CCB authorization required for patch

COTS Software Support (Cont.)

- **Escalation may be required, e.g., if there is:**
  - **Lack of timely solution**
  - **Unsatisfactory performance of technical support center/help desk**
- **Notify SOS/SEO**
  - **Senior Systems Engineers**
  - **ILS Logistics Engineer coordination for escalation within vendor organization**

Troubleshooting of Custom Software

- **Code maintained at ECS Development Facility**

- **ClearCase® for library storage and maintenance**

- **Sources of maintenance changes**
  - **M & O CCB directives**
  - **Site-level CCB directives**
  - **Developer modifications or upgrades**
  - **Trouble Tickets**

Implementation of Modifications

- **Responsible Engineer (RE) selected by each ECS organization**
- **SOS RE establishes set of CCRs for build**
- **Site/Center RE determines site-unique extensions**
- **System and center REs establish schedules for implementation, integration, and test**
- **CM maintains CCR lists and schedule**
- **CM maintains VDD**
- **RE or team for CCR at EDF obtains source code/files, implements change, performs programmer testing, updates documentation**

Custom Software Support

- **Science software maintenance not responsibility of ECS on-site maintenance engineers**

- **Sources of Trouble Tickets for custom software**
    - **Anomalies**
    - **Apparent incorrect execution by software**
    - **Inefficiencies**
    - **Sub-optimal use of system resources**
    - **TTs may be submitted by users, operators, customers, analysts, maintenance personnel, management**
    - **TTs capture supporting information and data on problem**

Custom Software Support (Cont.)

- **Troubleshooting is ad hoc, but systematic**
  - **Site report and Trouble Ticket (TT)**
  - **Referral to ECS Help Desk and System Operational Support**
  - **Problem Review Board at the Development Facility**
- **For problem caused by non-ECS element, TT and data are provided to maintainer at that element**

General ECS Troubleshooting

(Note: Lesson Guide has introduction and flow charts, followed by specific procedures)

- **Source of problem likely to be specific operations; first chart provides entry to appropriate flow chart**

- **Top-level chart provides entry into troubleshooting flow charts and procedures**

- **Flow charts for problems in basic operational capabilities:**
  - **Host and Server status checks**
  - **Connectivity**
  - **Database access**
  - **File access**
  - **Registering subscriptions**

General ECS Troubleshooting (Cont.)

- **Flow charts for problems with basic capabilities (Cont.)**

  - **Granule insertion and storage of associated metadata**

  - **Acquiring data from the archive**

  - **Ingest functions**

  - **PGE registration, Production Request creation, creation and activation of a Production Plan**

  - **Quality Assessment**

  - **ESDTs installed and collections mapped, insertion and acquiring of a Delivered Algorithm Package (DAP), and SSI&T functions**

  - **Data search and order**

  - **Data Pool insert and access**

  - **Data distribution, including FTPpush and FTPpull**

  - **(EDC only) Functions associated with Data Acquisition Request**

  - **(EDC only) Functions associated with On-Demand Production Requests**

Troubleshooting: Top-Level Problem Categories

1.0 Host and Server Status Checks See Procedure 1.1	**2.0** Checking Server Log Files See Procedure 2.1	**3.0** Connectivity Problems See Procedure 3.1	**4.0** Database Access Problems See Procedure 4.1	**5.0** File Access Problems See Procedure 5.1
6.0 Subscription Problems See Procedure 6.1	**7.0** Granule Insertion Problems See Procedure 7.1	**8.0** Acquire Problems See Procedure 8.1	**9.0** Ingest Problems See Procedure 9.1	**10.0** Planning and Data Processing Problems See Procedure 10.1
11.0 Quality Assessment Problems See Procedure 11.1	**12.0** Problems with ESDTs, DAP Insertion, SSI&T See Procedure 12.1	**13.0** Problems with Data Search and Order See Procedure 13.1	**14.0** Problems with Data Pool See Procedure 14.1	**15.0** Data Distribution Problems See Procedure 15.1
16.0 Problems with Submission of an ASTER Data Acquisition Request (EDC Only) See Procedure 16.1	**17.0** Problems with On-Demand Production Requests (EDC Only) See Procedure 17.1			

1.0: Host and Server Status Checks

Procedure 1.1

Checking the Status of Hosts and Servers

1.1.1 WhatsUp Gold indicates host is up ?

No — Restart host/ Resolve Hardware Problem

Yes

1.1.2 Whazzup indicates server can be pinged ?

No

Yes

1.1.3 EcCsIdPingServers and/or ps -ef | grep <serverprocess> find server up and listening ?

No

Yes — Exit

1.1.4 Can Server Be Started with script ?

No — 2.0

Yes

Server Started — Exit
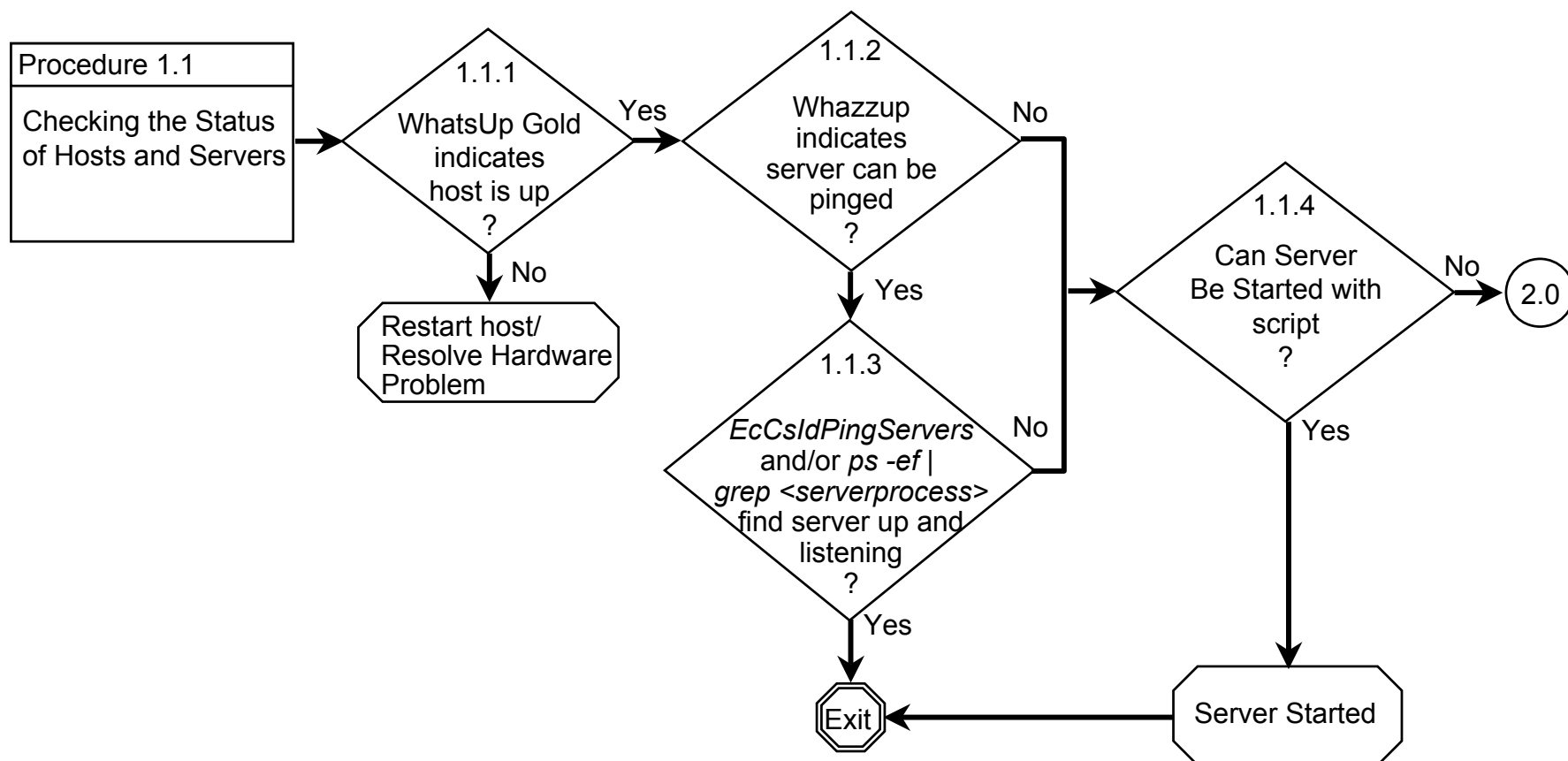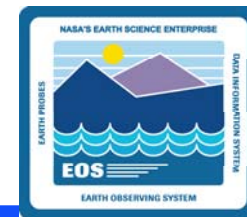
Checking Server Status

- **ECS functions depend on the involved software servers being in an "up" status and listening**

- **Basic first check in troubleshooting a problem is typically to ensure that the necessary hosts and servers are up and listening**

- **WhatsUp Gold and Whazzup??? provide real-time, dynamically updated displays of server and system status**

- **ECS Monitor can also provide server status; an associated script, *EcCsIdPingServers*, checks ability to connect to servers and clients**

- **Scripts provide the capability to start and stop servers; available scripts may start an individual server or multiple servers (e.g., servers in a mode)**

2.0: Checking Server Log Files

```
┌─────────────────────────┐
│ Procedure 2.1           │
├─────────────────────────┤
│                         │                    2.1.1
│   Checking Server       │ ──────▶          Log File
│   Log Files             │              Indicates Possible      Yes      ╭─────╮
│                         │                Problem with      ──────▶      │ 3.0 │
│                         │                 Connectivity               ╰─────╯
└─────────────────────────┘                      ?
                                                 │
                                                 │ No
                                                 ▼
                                              ⬡ Exit ⬡
```
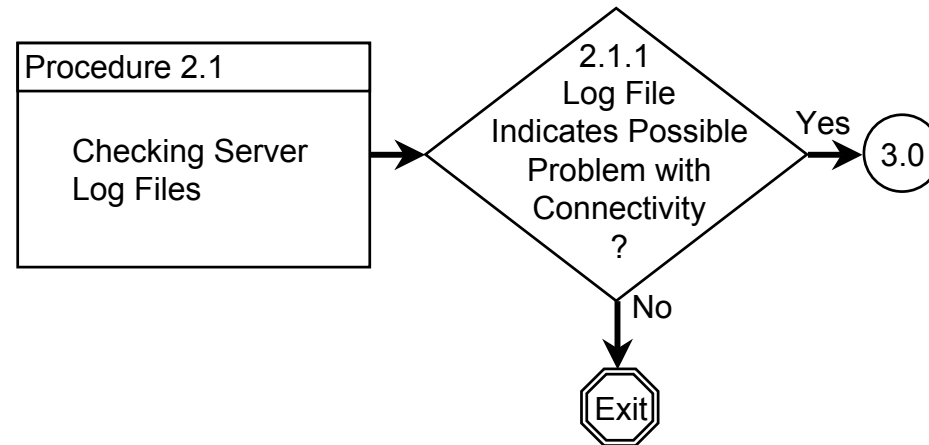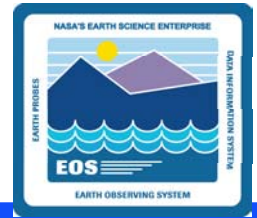
Checking Server Log Files

- **Log files: Information on possible sources of disruption in communications, server function, and many other potential trouble areas**

- **Two log files for a server**
  - **.ALOG: application log captures events, with level of detail dependent on AppLogLevel parameter setting (setting of 0 provides full trace, 1 provides messages for major events, 2 gives records of errors, 3 turns log off)**
  - **Debug.log: log captures detailed debug data, with level of detail dependent on DebugLevel parameter setting (setting of 3 provides full trace, 2 provides major events, 1 captures status and related errors, 0 turns log off; bitmasks for level 7 and 15 provide STMGT debugging)**
  - **May need to run utility EcLgLogCtrlStart to change from default debug-level setting**

- **Other logs (e.g., .err logs for processing, script logs; note especially STMGT Request Manager logs)**

3.0: Connectivity Problems
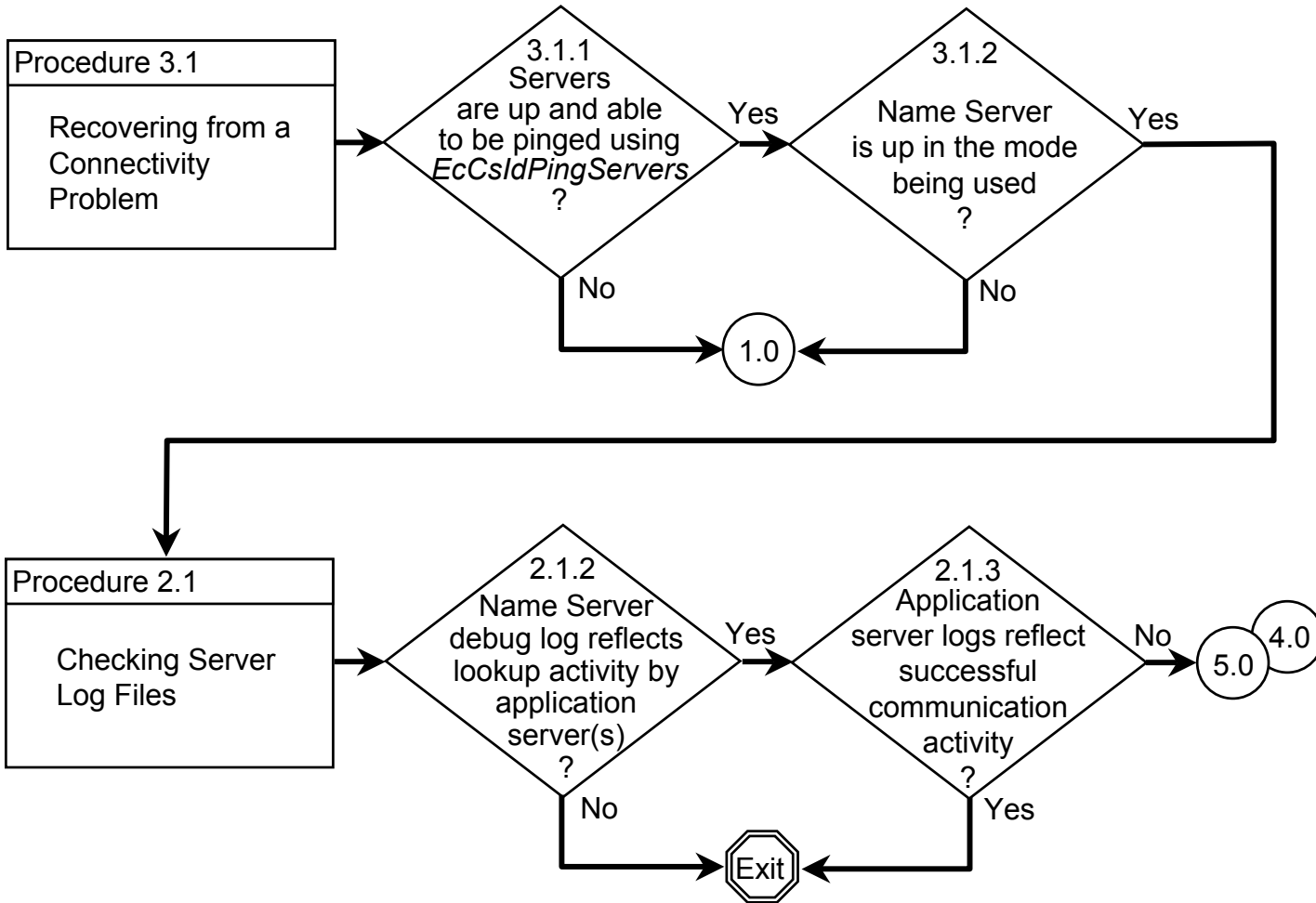
Connectivity Problems
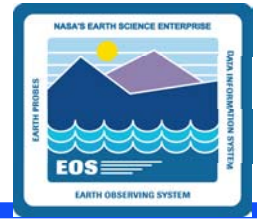
- **ECS depends on communications across multiple platforms on the network**

- **Review of server log files may point the way**
  - **Both the called server and the calling server**

- **Ensure servers are up**
  - **Application servers and Name Server**
  - **EcCsIdPingServers**

- **Application servers communicate with Name Server to look up location data to support connection -- see** *EcCsIdNameServerDebug.log*

- **Application server logs reflect communication activity**

4.0: Database Access Problems

Procedure 4.1

Recovering from a Database Access Problem

4.1.1 Sybase host for appropriate server shows active Sybase processes ? — Yes →

4.1.2 Sybase host for SDSRV shows Sybase start prior to SQS ? — Yes →

No ↓ (from 4.1.1) and No ↓ (from 4.1.2) →

(DB Administrator) Resolve Problem/ Restart Sybase

4.1.3 Sybase error indicated in log file(s) for application server ? — Yes → Restart Server to Re-Establish Connection

No ↓

Exit

Database Access Problems

- **Most ECS data stores use the Sybase database engine**

- **Sybase hosts listed in Document 920-TD*x*-009 (*x* = E for EDC, = G for GSFC, = L for LaRC, = N for NSIDC)**

- **On Sybase host, *ps -ef | grep dataserver* and *ps -ef | grep sqs* to check that SQS was started after Sybase dataserver processes (*Note*: This applies only to host for SDSRV database)**

- **On application host, *grep Sybase* <logfilename> to check for Sybase errors**

5.0: File Access Problems
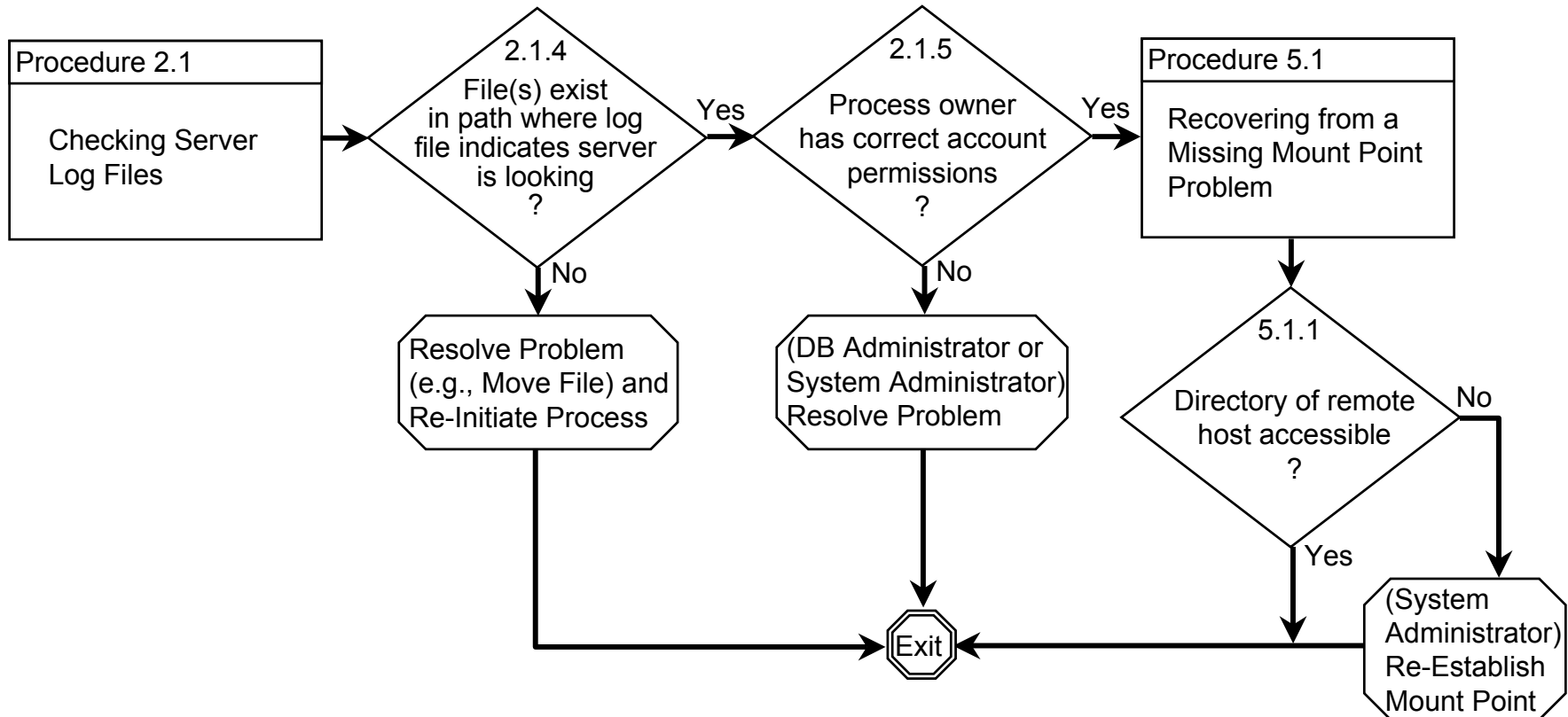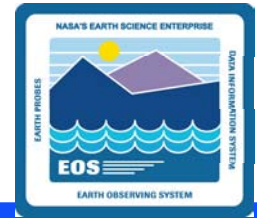
File Access/Mount Point Problems

- **ECS depends on remote access to files**
- **Ensure file is present in path where a client is seeking it**
- **Ensure correct file permissions**
- **Check for lost mount point and re-establish if necessary**
  - **Engineering Technical Directive:** *NFS Mount Point Installation/Update Standard Procedure*

6.0: Subscription Problems

Procedure 6.1

Recovering from a Subscription Server/ NSBRV Problem

6.1.1 Subscription Server is up and listening ? — Yes →

6.1.2 NSBRV Drivers running ? — Yes →

6.1.3 Subscription data displayed on NSBRV GUI ? — Yes →

No → Restart Server/Drivers

No → Restart Server/Drivers

No →

6.1.4 (DB Administrator) can log into database with with Username and Password used by SBSRV/ Drivers ? — No → (DB Administrator) Resolve Problem/ Restart Sybase

Yes ↓

6.1.5 Subscription qualifying conditions trigger action specified in subscription ? — No →

Procedure 2.1 Checking Server Log Files →

2.1.6 Driver/ server logs reflect successful communication activity ? — No → 5.0 4.0

Yes ↓

Yes → Exit ← Yes

SBSRV/NSBRV Problem

- **SBSRV plays key role in ECS Planning and Data Processing functions**
- **NSBRV is key to handling of standing requests from users for notification and/or distribution of data**
- **Ensure SBSRV is up and listening, and that NSBRV drivers are running**
- **Use NSBRV GUI to add a subscription for FTPpush of a small data file, and view the result**
- **Have Database Administrator attempt to log in to Sybase (on the NSBRV and SBSRV database hosts with the appropriate Sybase username and password)**
- **Check logs for SBSRV or NSBRV drivers**

7.0: Granule Insertion Problems
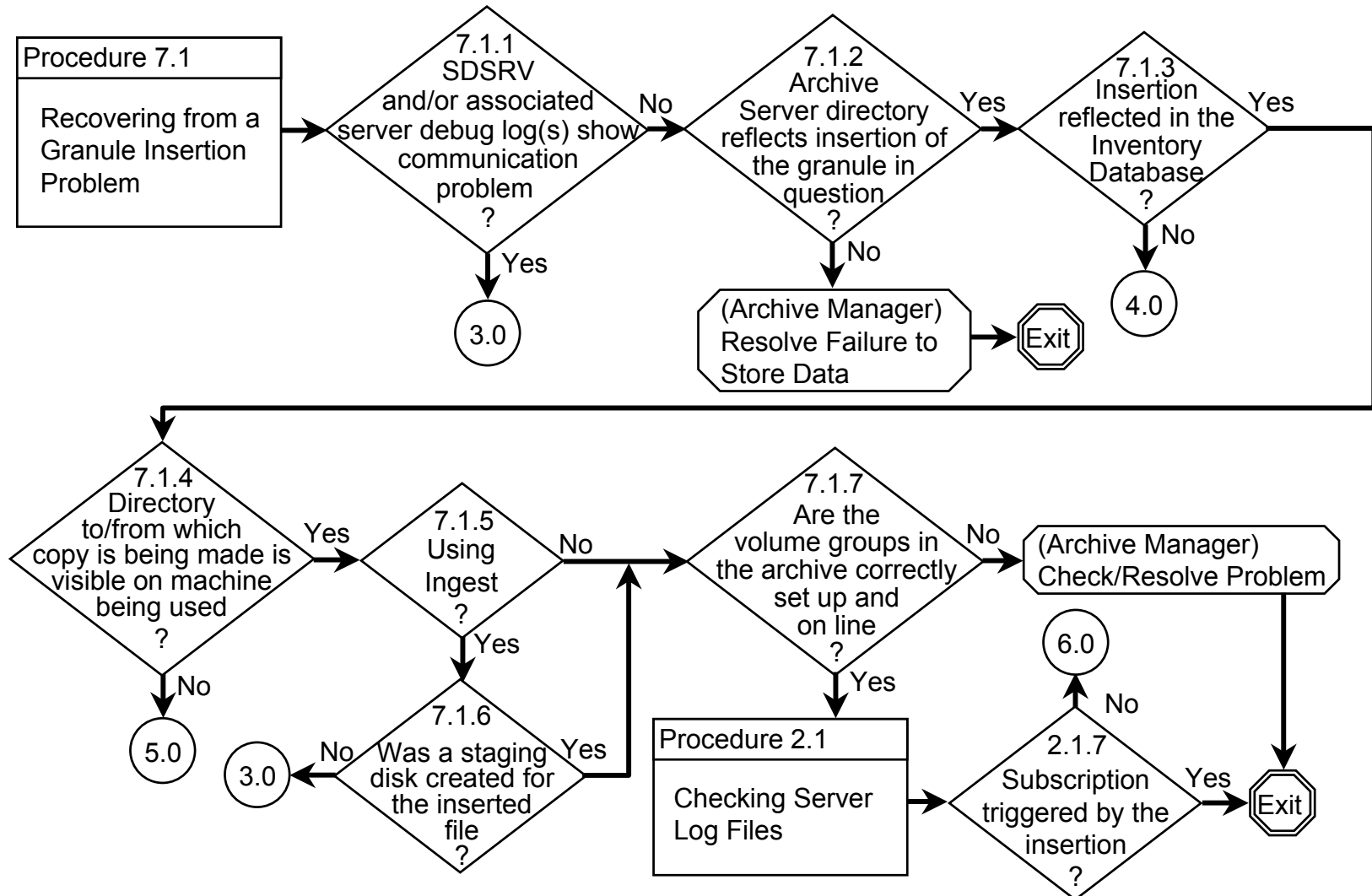
Granule Insertion Problems

- **ECS depends on successful archiving functions**
- **Check server logs (SDSRV, Archive Server, Request Manager Server) for communications errors**
- **Run Check Archive Script for consistency between Archive and Inventory**
- **List files in Archive to check for file insertion (/dss_stk1/*<mode>*/*<data_type_directory>*)**
- **Database Administrator check SDSRV Inventory database for file entry**
- **Check mount points on Archive and SDSRV hosts**
- **If dealing with Ingest, check for staging disk in *drp-* or *icl*-mounted staging directory**
- **Archive Manager check volume group set-up and status**
- **Check SDSRV and SBSRV logs to ensure that subscription was triggered by the insertion**

8.0: Acquire Problems
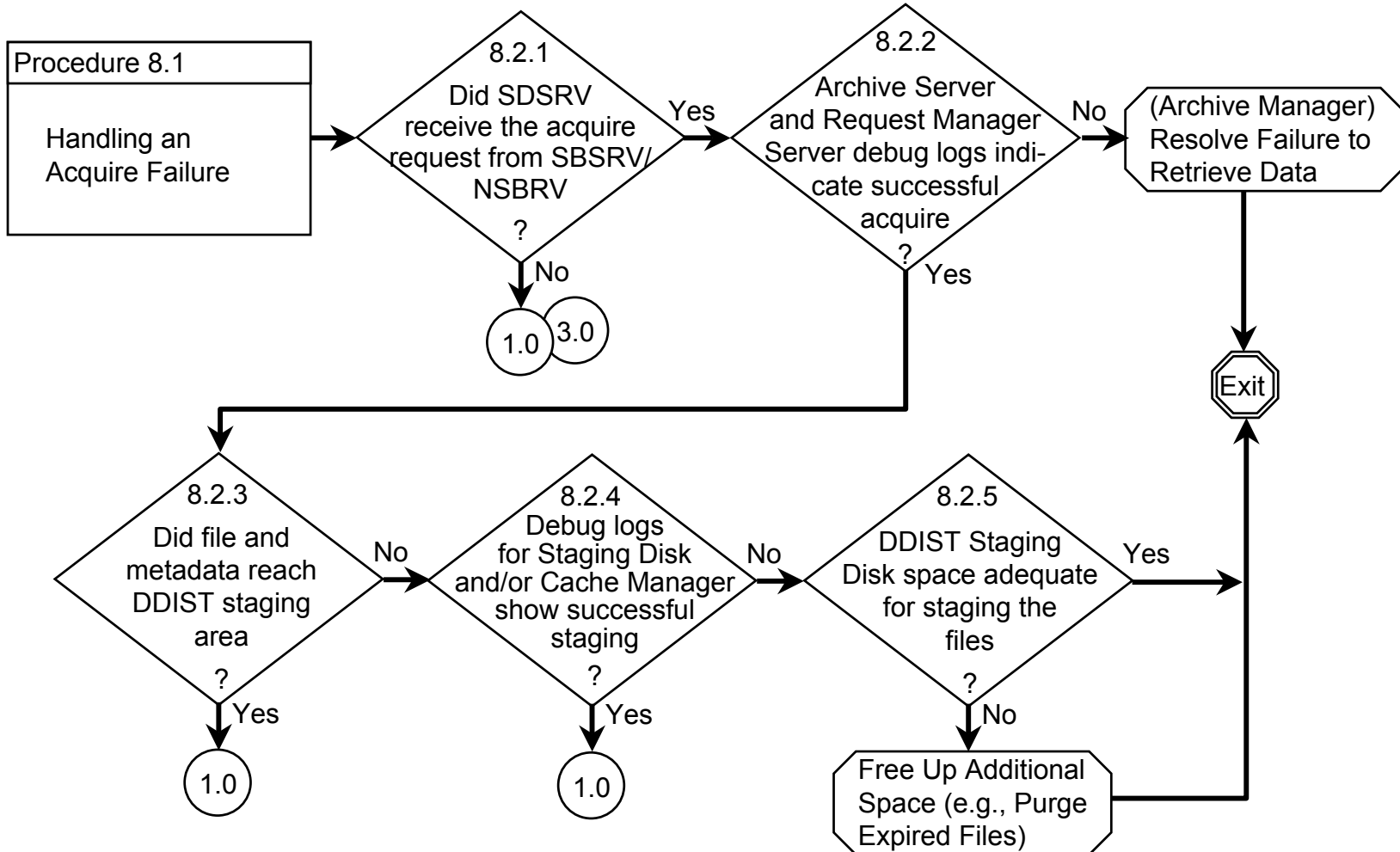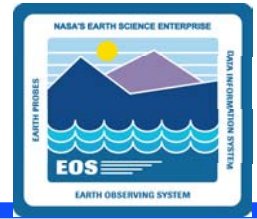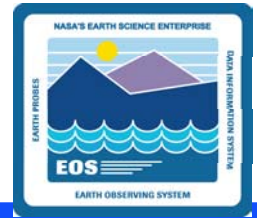
Acquire Problems

- **Functions requiring stored data are dependent on capability to acquire data from the Archive**
- **Check SDSRV GUI for Acquire request from SBSRV/NSBRV**
- **Check DDIST log for sending of e-mail notification to user**
- **Check for Acquire failure**
  - **Check SDSRV GUI for receipt of Acquire request**
  - **Check SDSRV logs for Acquire activity**
  - **Check Archive Server log for Acquire activity and Request Manager Server log for handling of the request**
  - **Check DDIST staging area for file and metadata**
  - **Check Staging Disk log for Acquire activity errors**
  - **Check staging area space available on the DDIST server**

9.0: Ingest Problems

```
Procedure 9.1
─────────────
Recovering from          9.1.1              No        9.1.2              No
Ingest Problems   ──▶    Ingest           ──────▶      Test Ingest     ──────▶   7.0
                         Technician able to            of appropriate type
                         resolve problem with          reflected in Archive
                         operational                   and Inventory
                         solution                      ?
                         ?
                              Yes                           Yes
```

Exit
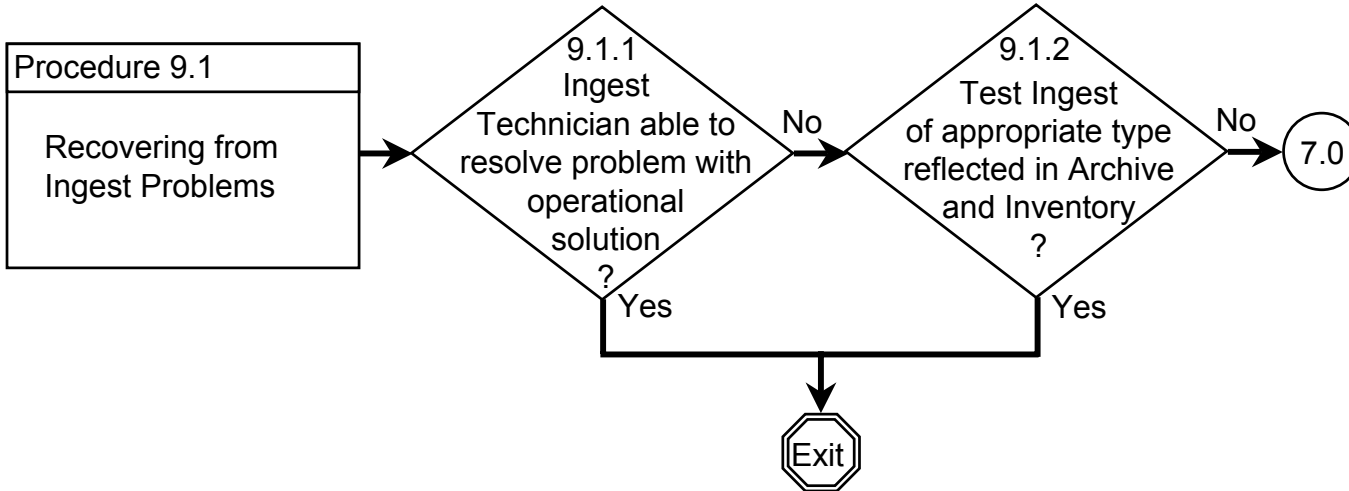
Ingest Problems

- **Ingest problems vary depending on type of Ingest**
- **Ingest GUI should be the starting point; Ingest technician/Archive Manager may resolve many Ingest problems (e.g., Faulty PDR, Threshold problems, disk space problems, FTP error, Ingest processing error)**
- **Have technician perform a test ingest of appropriate type**
  - **Check for granule insertion problems**
  - **Check Archive and Inventory databases for appropriate entries**

10.0: Planning and Data Processing Problems

Procedure 10.1

Recovering from a PDPS Plan Creation/ Activation and PGE Problem

10.1.1 PDPS staff able to resolve problem with operational solution ?
— No → **Procedure 2.1** Checking Server Log Files
— Yes → Exit

2.1.8 Logs show communication OK between PDPS and SDSRV during execution ?
— Yes
— No → 3.0 4.0

10.1.2 DSS Driver can insert file successfully ?
— Yes →
— No → 7.0

10.1.3 PDPS Mount Point visible on the SDSRV host ?
— Yes →
— No → 5.0

10.1.4 Does a plan for sample PGEs complete ?
— Yes →
— No → PDPS Staff Resolve Problem of Job Hanging in AutoSys → Exit

10.1.5 Did user receive e-mail notice of FTPpush ?
— Yes →
— No → 7.0

10.1.6 Were files pushed to the correct directory ?
— Yes →
— No → 15.0

Ping Machines With Which DDIST Communicates, Re-Booting If Necessary

PDPS Plan Creation/Activation and PGE Problems

- **Production Planning and Processing depend on registration and functioning of PGEs, and on data insertion and archiving**

- **Initial troubleshooting by PDPS personnel**

- **Check logs for evidence of communications problems between PDPS and SDSRV**

- **Have PDPS check for failed PGE granule; refer problem to SSI&T?**

- **Insert small file and check for granule insertion problems**

- **Check that PDPS mount point is visible on SDSRV and Archive Server hosts**

PDPS Plan Creation/Activation and PGE Problems (Cont.)

- **Have PDPS create and activate a plan for sample PGEs (e.g., ACT and ETS)**
  - **Ensure necessary input and static files are in SDSRV**
  - **Ensure necessary ESDTs are installed**
  - **Ensure there is a subscription for output (e.g., AST_08)**
- **Check for PDPS run-time directories**
- **Determine if the user in the subscription received e-mail concerning the FTPpush**
- **Determine if the files were pushed to the correct directory**
- **Execute *EcCsIdPingServers*, noting machines with which DDIST communicates from *x*0dis02**

11.0: Quality Assessment Problems

Procedure 11.1

Recovering from a QA Monitor Problem

→ 11.1.1 Data on which to perform QA present in Archive ? — Yes →

No ↓

Insert again, or (Archive Manager) Resolve Failure to Insert Data → Exit

Procedure 2.1

Checking Server Log Files

→ 2.1.9 SDSRV and QA Monitor GUI communications about the data query OK ? — No → 3.0

Yes ↓

→ Exit ←
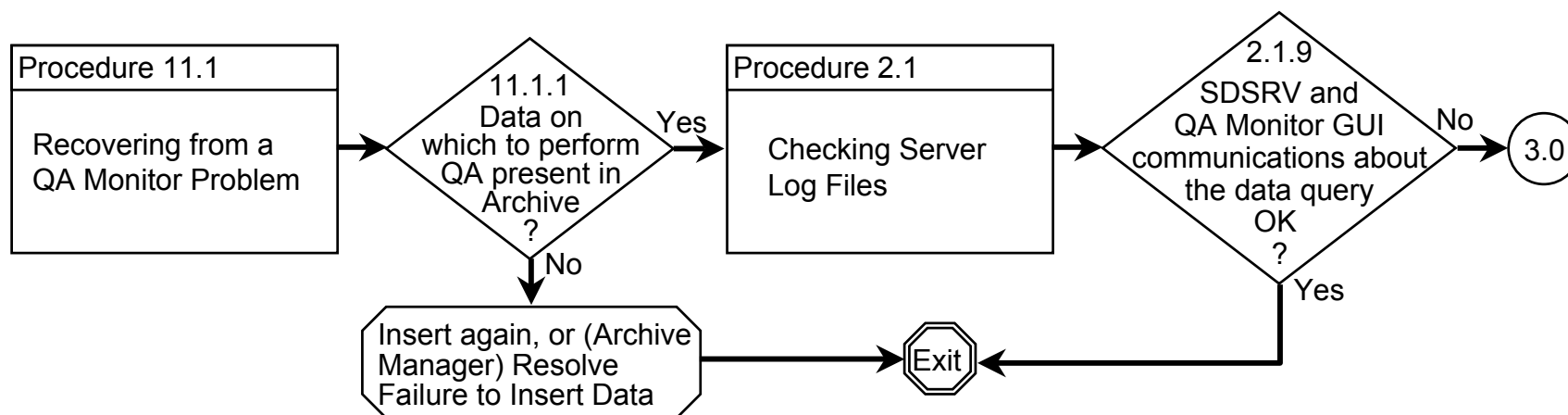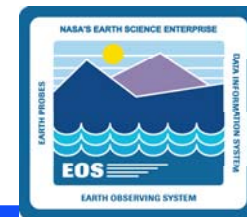
QA Monitor Problems

- **QA Monitor GUI is used to record the results of a QA check on a science data product (update QA flag in the metadata)**

- **Operator may handle error messages identified in Operations Tools Manual (Document 609)**

- **Check that the data requested are in the Archive**

- **Check SDSRV logs to ensure that the data query from the QA Monitor was received**

- **Check QA Monitor GUI log to determine if the query results were returned**
  - **If not, check SDSRV logs for communications errors**

12.0: Problems with ESDTs or SSI&T
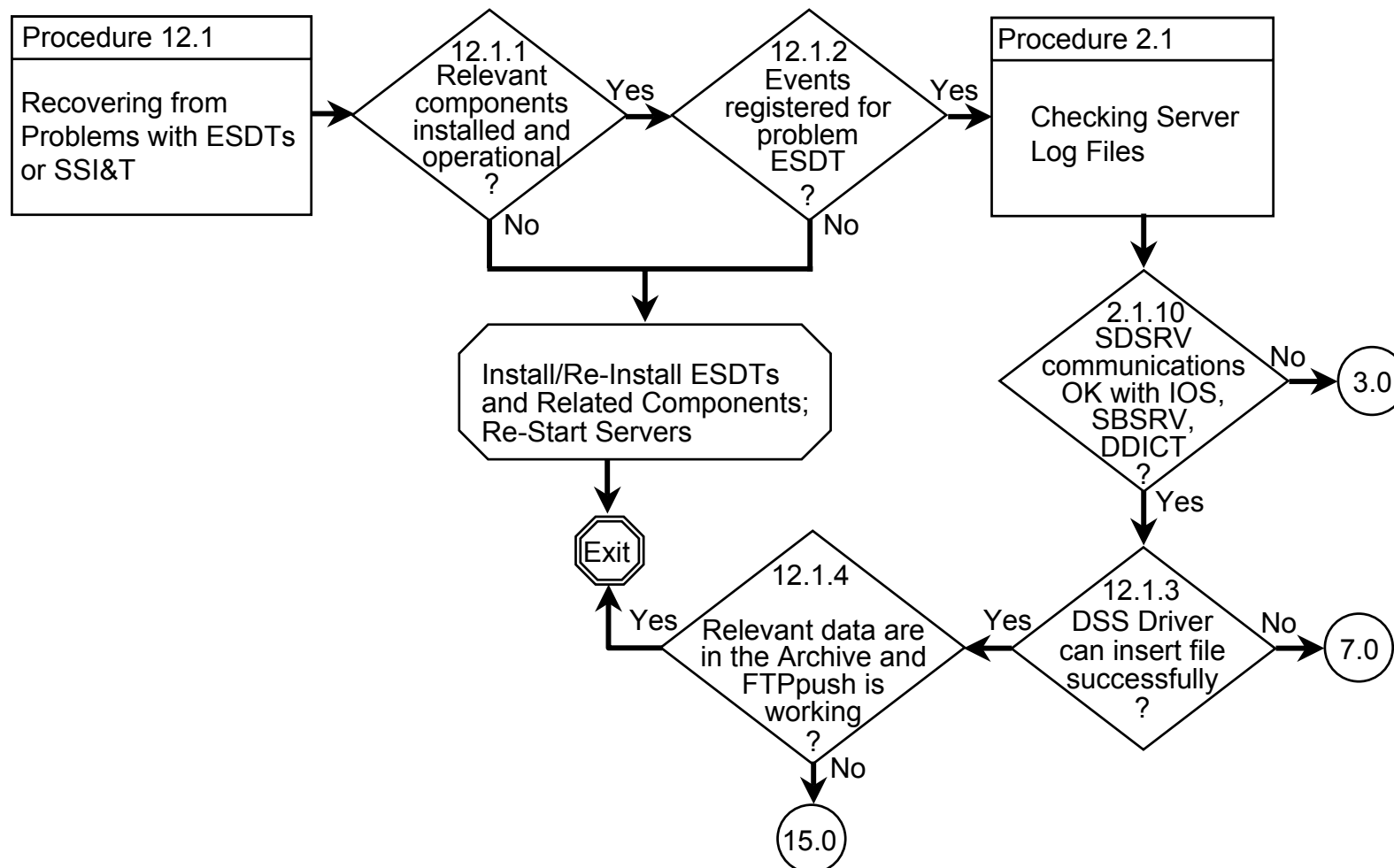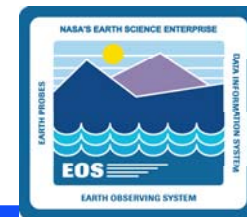
ESDT Problems
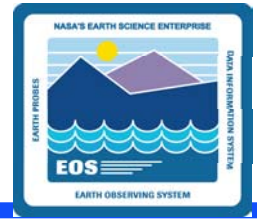
- **Each ECS data collection is described by an ESDT**
    - Descriptor file has collection-level metadata attributes and values, granule-level metadata attributes (values supplied by PGE at run time), valid values and ranges, list of services

- **Check SDSRV GUI to ensure ESDT is installed**

- **Check SBSRV GUI to ensure events are registered**

- **Check that IOS and DDICT are installed and up**

- **Check SDSRV GUI for event registration in ESDT Descriptor information**

- **Check log files for errors in communication between SDSRV, IOS, SBSRV, and DDICT**

Problems with Insertion/
Acquire and SSI&T Tools/GUIs

- **Check that Algorithm Integration and Test Tools (AITTL) are installed**

- **Check that ESDTs are installed**

- **Check for granule insertion problems**

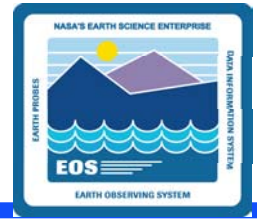- **Check archive for presence of the relevant data (e.g., Delivered Algorithm Package)**

- **Check for problems with FTPpush distribution**

13.0: Problems with Data Search and Order
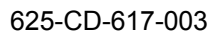
Data Search Problems

- **Data Search and Order functions, including V0GTWY/DDICT connectivity, are key to user access**
- **List files in Archive to check for presence of file (/dss_stk1/<mode>/<data_type_directory>)**
- **Check SDSRV logs for problems with search**
- **Review V0GTWY log to check that V0GTWY is using a valid *isql* query**
- **Ensure compatibility of collection mapping database used by DDICT and the EOS Data Gateway Web Client search tool**
  - **If necessary, perform collection mapping for DDICT (using DDICT Maintenance Tool)**
  - **Contact EOSDIS V0 Information Management System to check status of any recently exported ECS valids**

Data Order Problems
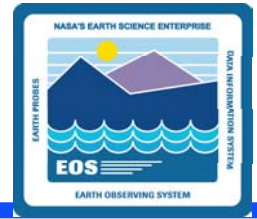
- **Registered user must be able to order products**
- **Check for data search problems**
- **Use DDIST GUI to determine if DDIST is handling a request for the data, and to monitor progress**
- **Use the Order Manager (OM) GUI to determine if Order Manager is handling a request for the data, and to monitor the progress, intervening as appropriate**
- **Determine if the user received e-mail notification**
- **Check server logs to determine where the order failed; check the OM server .ALOG to determine if there are any errors associated with its handling of the request; check SDSRV GUI to determine if SDSRV received the Acquire request from the Order Manager or PDS**

Data Order Problems (Cont.)

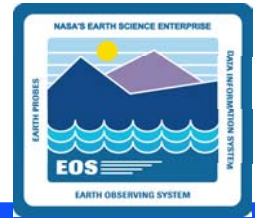- **Check DDIST staging area for presence of data; check staging disk space**

- **Use ECS Order Tracking GUI to check that the order is reflected in MSS Order Tracking; check database**

- **Execute *EcCsIdPingServers*, noting machines with which DDIST communicates from *x*0dis02**

- **If order is for L7 Scene data, check HDFEOS Server .ALOG to determine if the HDFEOS Server received the request**
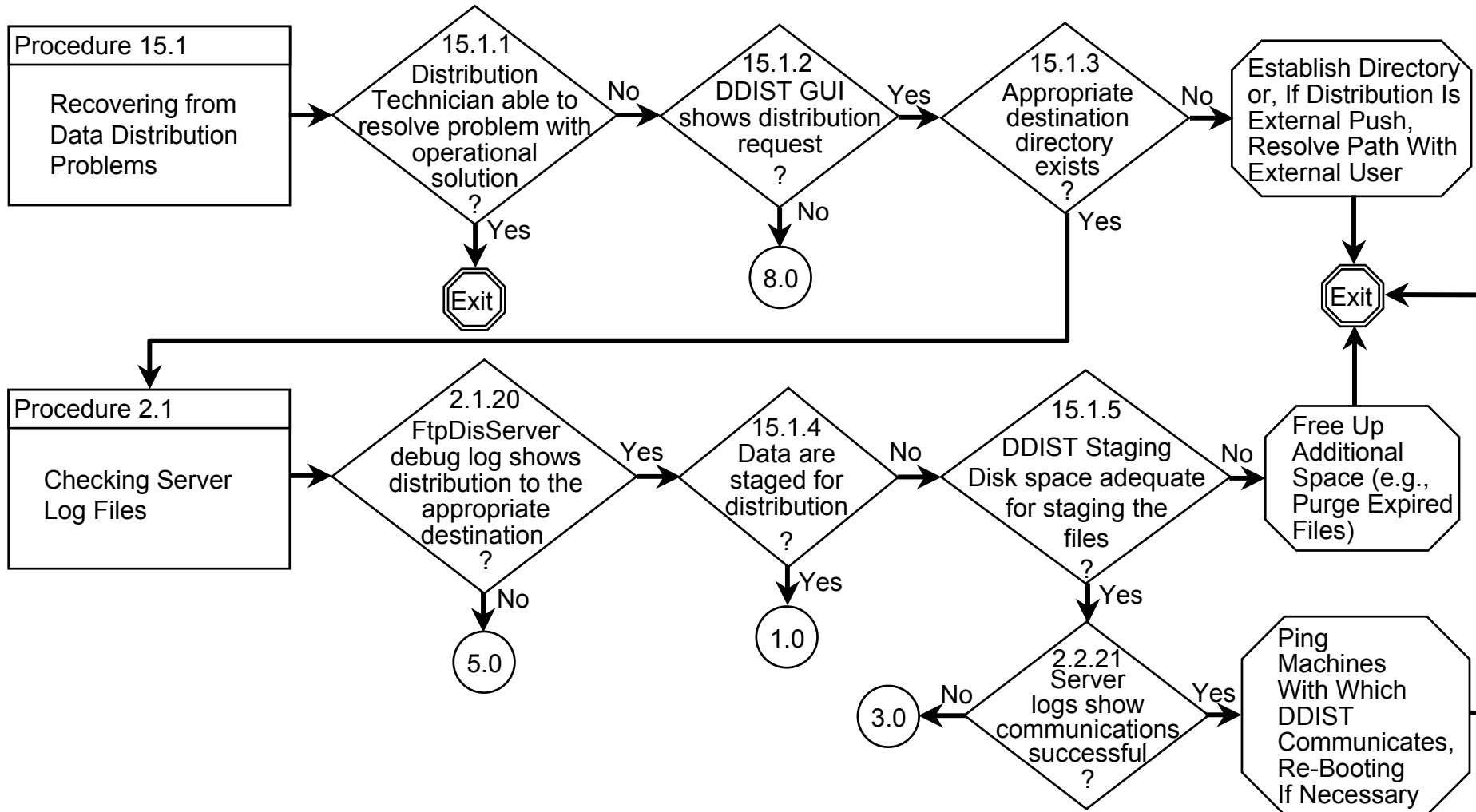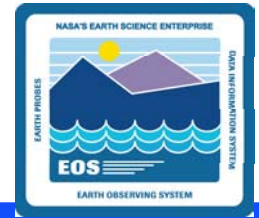
14.0: Problems with Data Pool
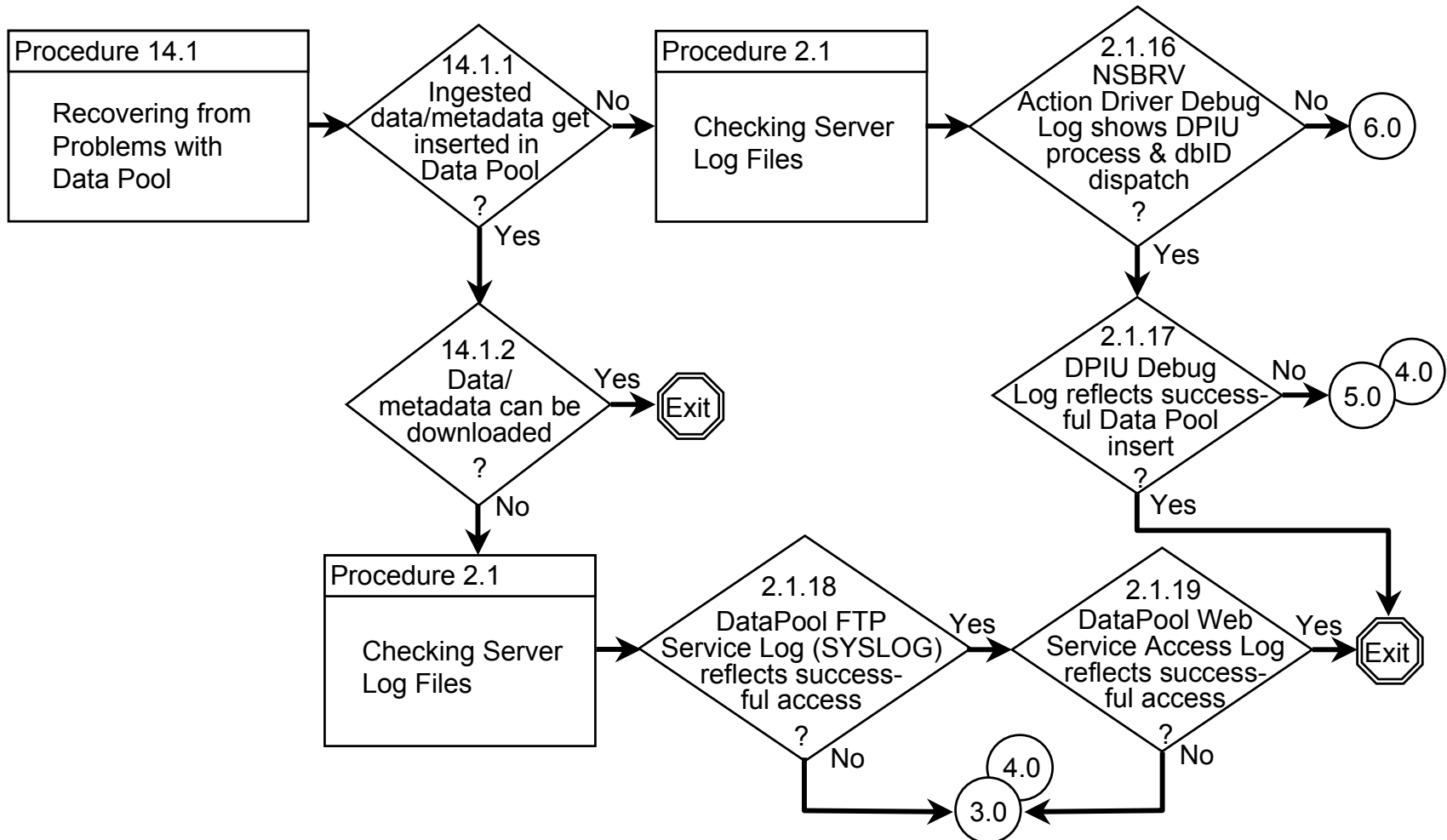
Problems with Data Pool (Cont.)

Data Pool: on-line access (by Web Access Tool or FTP) to science data, metadata, and browse data

- **Check if ingested data and/or metadata appear in Data Pool (use Web Access Tool or FTP)**
- **Check NSBRV Action Driver debug log for Data Pool Insert Utility (DPIU) activation and dbID dispatch**
- **Check DPIU log for successful Data Pool insert**
- **To check download function, use Web Access Tool or FTP**
- **If data are not downloaded, check SYSLOG for FTP activity and Web Access log for access activity**

15.0: Data Distribution Problems

Procedure 15.1

Recovering from Data Distribution Problems

15.1.1 Distribution Technician able to resolve problem with operational solution? — **Yes** → Exit

No → **15.1.2** DDIST GUI shows distribution request? — **No** → 8.0

Yes → **15.1.3** Appropriate destination directory exists? — **No** → Establish Directory or, If Distribution Is External Push, Resolve Path With External User → Exit

Yes → (down to 2.1.20)

Procedure 2.1

Checking Server Log Files

2.1.20 FtpDisServer debug log shows distribution to the appropriate destination? — **No** → 5.0

Yes → **15.1.4** Data are staged for distribution? — **Yes** → 1.0

No → **15.1.5** DDIST Staging Disk space adequate for staging the files? — **No** → Free Up Additional Space (e.g., Purge Expired Files) → Exit

Yes → **2.2.21** Server logs show communications successful? — **No** → 3.0

Yes → Ping Machines With Which DDIST Communicates, Re-Booting If Necessary → Exit
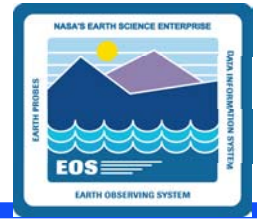
82
625-CD-617-003

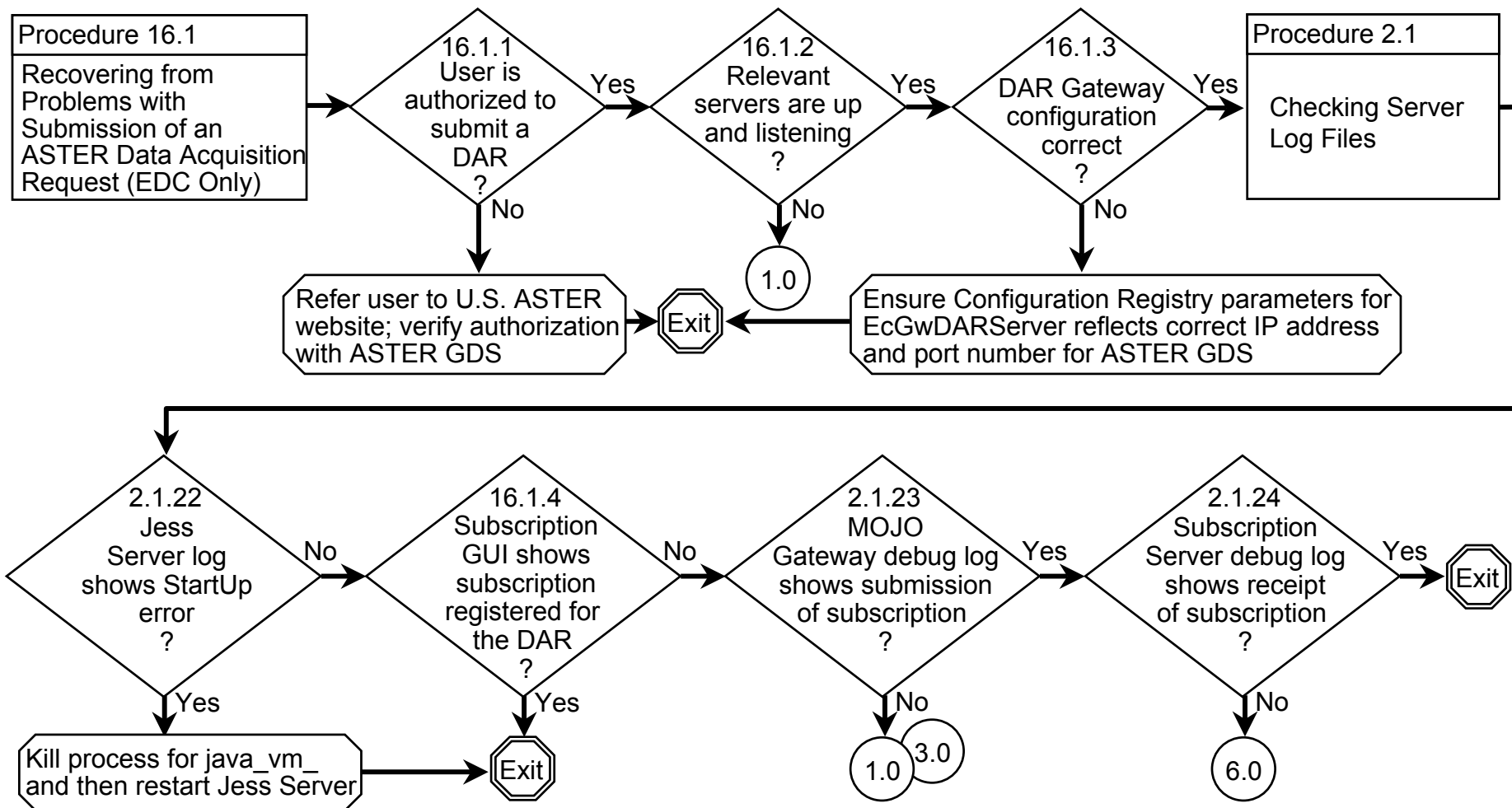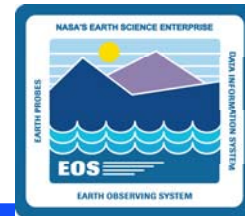# Problems with FTPpush Distribution

- **FTPpush process is central to many ECS functions**
- **Use DDIST GUI to determine if DDIST is handling a request for the data, and to monitor progress**
- **Check server logs (FtpDis, DDIST) to ensure file was pushed to correct directory**
- **Check that the directory exists**
- **Check FtpDis logs for permission problems**
- **Check for Archive Server staging of file; check staging disk space**
- **Check server logs to find where communication broke down**

Problems with FTPpull Distribution

- **FTPpull is key mechanism for data distribution**
- **Use DDIST GUI to determine if DDIST is handling a request for the data, and to monitor progress**
- **Check that the directory to which the files are being pulled exists**
- **Check FtpDis logs for permission problems**
- **Check for Archive Server staging of file**
- **Check server logs to find where communication broke down**
- **Execute EcCsIdPingServers, noting machines with which DDIST communicates from *x*0dis02**

16.0: Problems with Submission of a Data Acquisition Request (EDC Only)

Procedure 16.1
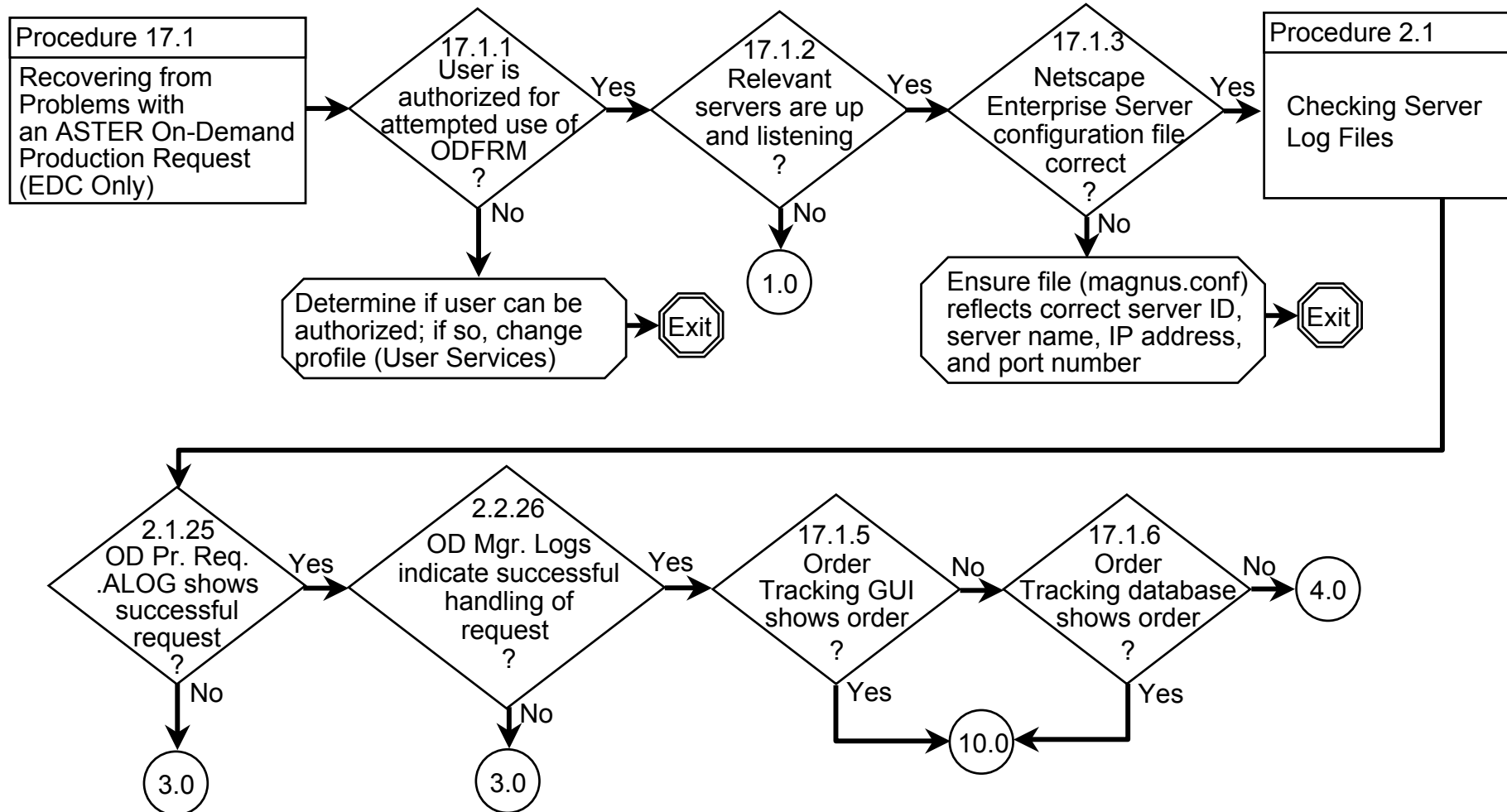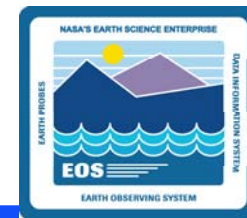Recovering from Problems with Submission of an ASTER Data Acquisition Request (EDC Only)

16.1.1 User is authorized to submit a DAR ?
— Yes →
— No ↓

16.1.2 Relevant servers are up and listening ?
— Yes →
— No ↓

16.1.3 DAR Gateway configuration correct ?
— Yes →
— No ↓

Procedure 2.1
Checking Server Log Files

Refer user to U.S. ASTER website; verify authorization with ASTER GDS → **Exit**

1.0

Ensure Configuration Registry parameters for EcGwDARServer reflects correct IP address and port number for ASTER GDS → **Exit**

2.1.22 Jess Server log shows StartUp error ?
— No →
— Yes ↓

16.1.4 Subscription GUI shows subscription registered for the DAR ?
— No →
— Yes ↓

2.1.23 MOJO Gateway debug log shows submission of subscription ?
— Yes →
— No ↓

2.1.24 Subscription Server debug log shows receipt of subscription ?
— Yes → **Exit**
— No ↓

Kill process for java_vm_ and then restart Jess Server → **Exit**

1.0 **3.0**

6.0

Problems with DAR Submission

- **EDC supports the Java DAR Tool to enable authorized users to submit ASTER Data Acquisition Requests to the ASTER GDS**

- **Check for accounts**
  - **Registered user with DAR permissions**
  - **Account established at ASTER GDS**

- **Check that servers are up and listening**
  - **EcMsAcRegUserSrvr (on e0mss21)**
  - **EcGwDARServer (on e0ins01)**
  - **EcSbSubSrvr (on e0ins01)**
  - **EcCsMojoGateway (on e0ins01)**
  - **EcClWbJestSv.jar (on e0ins02)**
  - **EcIoAdServer (on e0ins02)**
  - **Netscape Enterprise Server (on e0dms03)**

DAR Submission Problems (Cont.)

- **Check Configuration Registry to ensure that the IP address and port for the EcGwDARServer are correct (Note: This check may need to be done by the Configuration Management Administrator)**

- **Examine server log files**
  - **Ongoing activity indicates servers are functioning**
  - **Check at time of problem for evidence of communications breakdown or other problems**

- **Determine if subscription worked**
  - **Mojo Gateway debug log should reflect submission of subscription**
  - **Subscription Server debug log should reflect receipt of subscription**

17.0: Problems with On-Demand Production Requests (EDC Only)

Procedure 17.1

Recovering from Problems with an ASTER On-Demand Production Request (EDC Only)

17.1.1 User is authorized for attempted use of ODFRM ? — Yes →

17.1.2 Relevant servers are up and listening ? — Yes →

17.1.3 Netscape Enterprise Server configuration file correct ? — Yes →

Procedure 2.1

Checking Server Log Files

No ↓ (from 17.1.1)
Determine if user can be authorized; if so, change profile (User Services) → Exit

No ↓ (from 17.1.2)
1.0

No ↓ (from 17.1.3)
Ensure file (magnus.conf) reflects correct server ID, server name, IP address, and port number → Exit

2.1.25 OD Pr. Req. .ALOG shows successful request ? — Yes →

2.2.26 OD Mgr. Logs indicate successful handling of request ? — Yes →

17.1.5 Order Tracking GUI shows order ? — No →

17.1.6 Order Tracking database shows order ? — No → 4.0

No ↓ (from 2.1.25)
3.0

No ↓ (from 2.2.26)
3.0

Yes ↓ (from 17.1.5)
10.0

Yes ↓ (from 17.1.6)
10.0

Problems with On-Demand Production Requests

- **Authorized users may use the On-Demand Form Request Manager (ODFRM) to submit on-demand requests for production of ASTER L1B and Digital Elevation Model data; any user may order other ASTER higher-level data products (Note: On-Demand access available through the EDG tool; ODFRM is generally not used)**

- **Check user account information**
  - **Registered user with appropriate permissions**

- **Check that servers are up and listening**
  - **EcMsAcRegUserSrvr (on e0mss21)**
  - **EcMsAcOrderSrvr (on e0mss21)**
  - **Netscape Enterprise Server (on e0dms03)**
  - **EcPlOdMgr (on e0pls02)**
  - **EcSbSubSrvr (on e0ins01)**
  - **EcIoAdServer (on e0ins02)**

Problems with On-Demand Production Requests (Cont.)

- **Check Enterprise Server configuration file for correct setup of server and port**

- **Check server log files for communication between ODFRM and ODPRM and correct handling of on-demand request**
  - **Enterprise Server *access* and *errors* logs (on e0dms03)**
  - **EcClOdProductRequest.ALOG (on e0ins02)**
  - **EcPlOdMgr.ALOG (on e0pls02)**
  - **EcPlOdMgrDebug.log (on e0pls02)**

- **Use ECS Order Tracking GUI to check that the order is reflected in MSS Order Tracking; check database**

Trouble Ticket (TT)
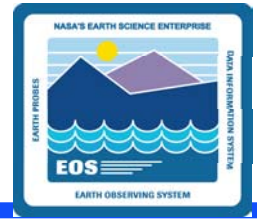
- **Documentation of system problems**

- **COTS Software (Remedy)**

- **Documentation of changes**

- **Failure Resolution Process**

- **Emergency fixes**

- **Configuration changes $\rightarrow$ CCR**

Using Remedy

- **Creating and viewing Trouble Tickets**

- **Adding users to Remedy — TT Administrator**

- **Controlling and changing privileges in Remedy — TT Administrator**

  - **Select group to which a user is assigned**

  - **Select forms accessible by groups**

  - **Specify fields a group may view or view and change**

- **Generating Trouble Ticket reports — System Administrator, others**

Remedy User Form Screen
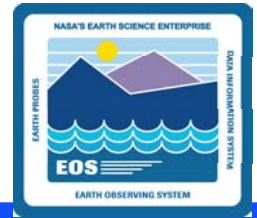
Remedy Admin Log In

Remedy Admin Server Window
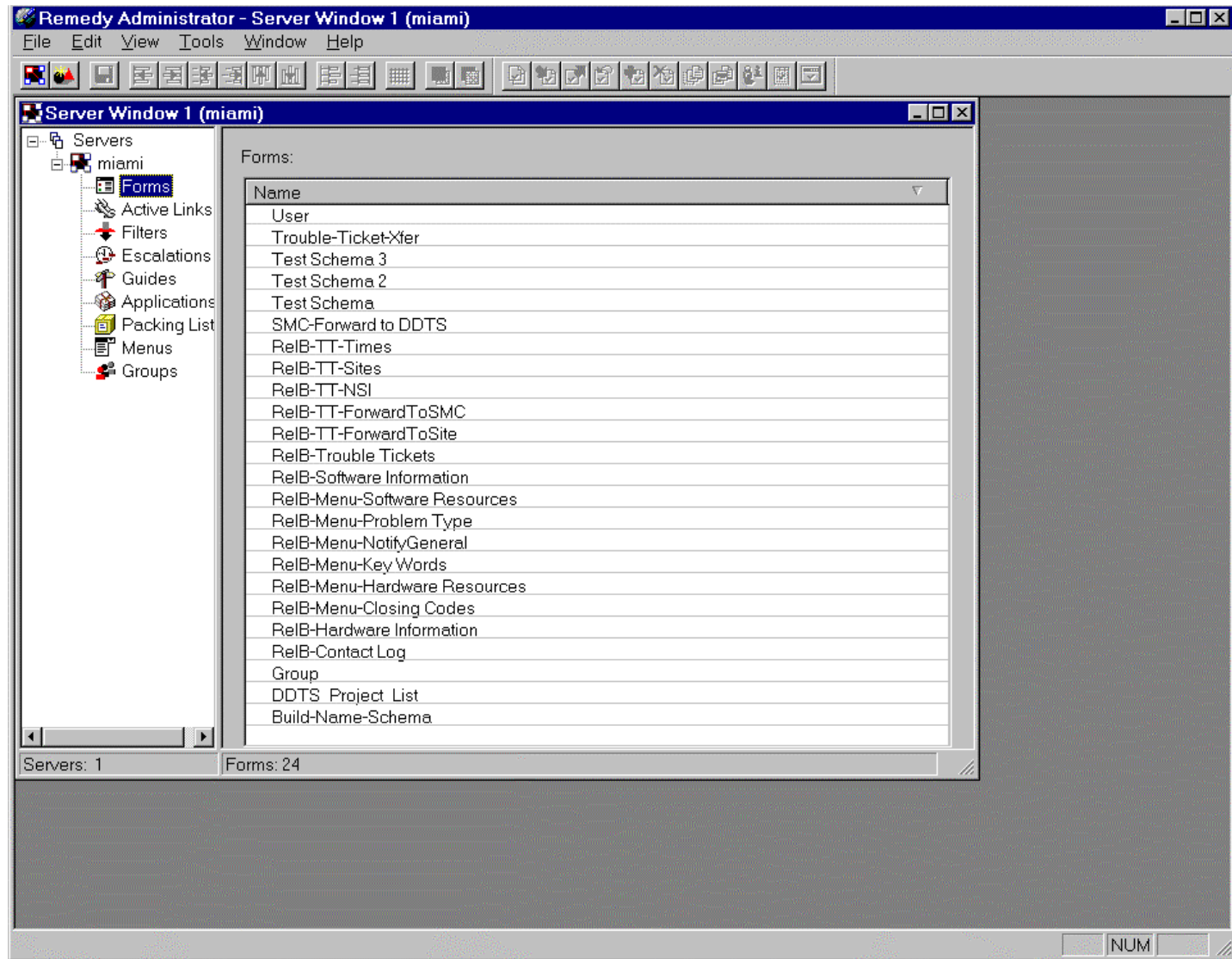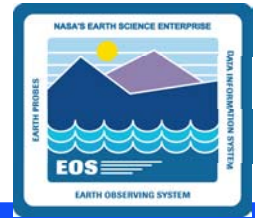
Adding Users to Remedy

- **Status**

- **License Type**

    - **Read**

    - **Fixed Write**

    - **Floating Write (5 per DAAC)**

- **Login Name**

- **Password**

- **Email Address**

- **Group List**

- **Full Name**

- **Phone Number**

- **Home DAAC**

- **Default Notify Mechanism**

- **Full Text License**

- **Creator**

Changing Privileges in Remedy

- **Group assignment determines privileges of a user**

- **Form Permissions of a group determine which forms a user can choose from the Open dialog of the User form**

- **Field Permissions of a group determine user access to fields on a form**
  - **View**
  - **Change**

Group Permissions Window

Generating Trouble Ticket Reports

- **Assigned-to Report**
- **Average Time to Close TTs**
- **Hardware Resource Report**
- **Number of Tickets by Status**
- **Number of Tickets by Priority**
- **Review Board Report**
- **SMC TT Report**
- **Software Resource Report**
- **Submitter Report**
- **Ticket Status Report**
- **Ticket Status by Assigned-to**

Remedy Admin - Reports

Operational Work-around

- **Managed by the ECS Operations Coordinator at each center**

- **Master list of work-arounds and associated trouble tickets and configuration change requests (CCRs) kept in either hard-copy or soft-copy form for the operations staff**

- **Hard-copy and soft-copy procedure documents are "red-lined" for use by the operations staff**

- **Work-arounds affecting multiple sites are coordinated by the ECS organizations and monitored by ECS M&O Office staff**